Railway Age

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Transporting Distinguished Foreign Visitors

NOW that the charming Queen of Roumania has been safely restored to her own country the railway officers of the United States can breathe easily and meditate and confer in peace upon the question of how distinguished foreign visitors, especially royalty, should be transported in this country in future. It would seem to be a proper function for the government to provide the funds and programs for the entertainment for such visitors, but the government did not do this in the case of Queen Marie. It furnished her transportation across the ocean, gave her opportunity to call upon the president and after that practically ignored her. Some of the railways furnished practically free transportation for her and her entourage. The democratic candidate for United States Senator in Iowa made a political issue of this saying the railways should not transport foreign royalty free when it made the farmers pay the freight. Other railways declined to transport the party free and were both criticized and applauded for it. The government did not even afford police protection, and some bandits might have caused a pretty sensation by holding up the party and appropriating its jewels. When another foreign royalty or eminent personage prepares to descend upon these shores the railways will no doubt consider it expedient to reach an understanding with the highest authorities in Washington as to who is to pay transportation bills and have charge of the tour. Recent experience shows they may well leave the entire matter in the hands of the government.

Mechanical Department Registers Progress

IT is easy to criticize something that you know very little about. The railroad managements are frequently taken to task by outsiders because of their lack of initiative in adopting new devices or practices. Indeed, it would seem that it is always the open season for such attacks. It is to be sincerely regretted, moreover, that such criticisms are often carelessly and thoughtlessly made by men of high intelligence, and more often than not, with a seeming voice of authority. Fortunately more and more of the thinking public is getting a larger vision and better idea of many of the difficulties involved in operating a large transportation system in such a way as to best serve the public needs. A striking instance of a comparatively small group of men who are doing much to bring about better understandings among an important body of industrial leaders and engineers is the Railroad Division of the American Society of Mechanical Engineers. In a quiet but persistent way it has tried to direct the thinking of the members of that society toward some of the more important mechanical engineering problems of the railways. Among its contributions is an annual summary of progress in the railway mechanical engineering field, together with some observations on the tendencies or trends in development. These progress reports, and particularly the one presented at the annual meeting of the American Society of Mechanical Engineers in New York this week, compare favorably with similar reports in other fields of mechanical engineering endeavor and indicate in no uncertain way the progressive attitude of many of the railway mechanical department officers in applying scientific methods to the solution of their problems.

Stores Activities in Australia

IN an article appearing in last week's issue, an Australian railway officer gave an account of the improvements made in the supply department of the Victorian Railways, which are one of the largest systems in that country. The work done and the report of it are interesting in a number of ways. In the short space of five years this road has practically reconstructed its supply department. Everywhere on the system the facilities have been rebuilt or extensively renovated. New methods have been inaugurated. Centralization of stock, sectionalization or organization, stores delivery, large scale reclamation activities with up-to-date machinery have been inaugurated. A new general store of imposing proportions and exceptional attractiveness has been provided. American railway officers will be pleased to know that the extent and character of this work were largely inspired by and modeled after practices in this country. Australia crossed the Pacific to see and study supply conditions here, and was so impressed with what our railroads are doing that it has seen fit to adopt similar methods in its own land. Incidentally, the friendly attitude and aid accorded students of our methods have had an effect. Since the Victorian Railways commenced their work, railways in other parts of Australia have undertaken similar work. These developments are a tribute to the work of railway supply officers in this country.

Seating Accommodations in Suburban Trains

THE fact that the general public is more easily reached through its emotions than through its powers for pure reason explains the peculiar efficacy of the slogan or the well-turned phrase in advancing a cause in popular esteem. Any one with a cause to plead before the bar of public opinion will find his case materially aided, regardless of its intrinsic merit, if he can characterize it in forceful and imaginative English. He can achieve the same effect if he can succeed in applying an equally rich, though unfavorable, phrase to

an opponent. A recent instance of the latter is the term "steerage car" applied by chronic commutation service critics to the coach with seats for three on one side of the aisle and for two on the other. The term is entirely unjust, connotating as it does crowded, dirty and uncomfortable accommodations. The real fact of the matter is just the reverse. These cars afford additional comfort for suburban passengers, since the few extra seats they provide virtually obviate the necessity of standing by any passengers. One popular suburban train in the New York territory had each evening a dozen or more passengers standing when leaving the terminal. The train already had as many cars as the railroad could handle and the line being at the saturation point in the number of trains run, new train service could not be added. The railroad placed two cars equipped with "three-two" seats in the train and now every passenger has a seat. Sufficient passengers leave the train at the first station to permit those remaining to "spread out" if they care to, and even when the three-two seats are all occupied each passenger has as much space as he would in a trolley car or bus seat. The three-two car is a "seats-for-everybody car" and should be welcomed by commuters who desire comfortable service, not only for themselves but for their fellows who board the train just before it departs.

An Award of Higher Wages—Without the Reasons for It

THE award of a 7½ per cent advance in wages to the conductors and trainmen of the eastern railways is an important development; but it will be impossible for some time to measure just how important it is.

The award is the outcome of a series of steps which cannot be criticized, whatever may fairly be said of the award itself. The leadership of the conductors' and trainmen's brotherhoods, especially of the latter, has been more sane and fair to the railways than that of any other labor unions. The leaders of the trainmen's brotherhood opposed a strike against reductions of wages five years ago when other labor leaders favored it. They have never participated in radical propaganda against private ownership, but have openly opposed government ownership when other labor leaders have advocated it. The willingness shown by the conductors' and trainmen's organizations to arbitrate in this instance was in harmony with the attitude often assumed by them when other unions assumed an entirely different attitude. In past arbitrations union leaders often supported their claims regarding working conditions and wages with violent attacks upon railway management. The hearings in the recent arbitration were refreshingly free from such mud-slinging.

An Inconsistency in Brotherhood's Policy

There has been, however, one outstanding inconsistency in the policy of the trainmen's brotherhood. In this arbitration one of the principal arguments used by its spokesmen was that the men they represented were entitled to increased pay because of increased "productive efficiency." They cited the increase which has occurred, especially since 1921, in ton-miles per employee in support of this argument. The comparison with 1921, a year in which freight business showed a decline of 35 per cent, was obviously fallacious. Besides, such increase as has occurred in ton-miles per employee has been due to the increase in tons per train and the various means by which it has been effected. At the very time when some leaders of the trainmen's brotherhood were in New York using the long train as an argument for an increase in wages, other leaders of the same organization were trying in Kansas to get government action to compel limitation and reduction of the length of trains. They were trying in one place to get more pay for the "productive efficiency" which in another place they were trying to get destroyed.

Why Was the Award So Large?

As soon as the personnel of the arbitration board to settle the controversy on the eastern railways was announced, railway officers generally concluded it would grant some advance in wages. The representatives of the railways and of the employees were unable to agree upon the two presumably impartial arbitrators, and they were appointed by the Federal Board of Mediation and Conciliation. One of them was the chairman of a large manufacturing concern. The other was a former member of the Interstate Commerce Commission who, before his appointment to the commission, was the head of the Order of Railway Conductors. The board as thus constituted seemed certain either to disagree or to grant some advance in wages. What surprised railway officers was that the advance granted was as much as 7½ per cent. None of them expected it to be more than 5 per cent. The engine and train service employees secured an advance of 5 per cent throughout the country in 1924. The advance now awarded will make the wages of the conductors and trainmen of the eastern railways even higher than the previous maximum wages awarded them by the Railroad Labor Board in 1920. The cost of living is much lower now than it was then. Even within the last year commodity prices have declined considerably.

The student of economics, and especially of labor and railway matters, would like to know why the two arbitrators appointed by the Mediation and Conciliation Board voted for such an unexpectedly large advance. He will seek in vain for the reasons in the report signed by these and the labor arbitrators. The majority report says: "It is not contended that these railroads cannot afford to bear some increases in wages of their employees." Elsewhere it is stated that the award follows upon "full consideration of all the conditions and circumstances presented in the record and of the peculiar, exacting, hazardous and responsible character of the services performed by these employees." Nothing else is said that gives the least clue to the reasons for the decision. The silence kept regarding them plainly was a result of deliberate consideration. The arbitrators representing the railways filed a dissenting opinion giving from their standpoint very definitely the reasons why the advance should not be granted, and there is no answer, direct or indirect, in the majority opinion to the facts and arguments presented by the minority. Aside from its direct effects, the award may have indirect effects of great importance. The arbitrators appointed by the Mediation and Conciliation Board failed to perform a manifest duty when they abstained from fully and definitely setting forth the reasons for their decision.

Train Service and Other Wages

The most important question raised is as to the indirect effects that will be produced upon the wages of other employees. Will the engineers and firemen of the eastern lines be given corresponding advances? Will both the engine and train service employees of the southern and western lines demand and get corresponding advances? The western roads, being less prosperous, can make a much stronger answer than could the eastern roads to the contention that they can afford to pay higher wages. Will other classes of railway em-

ployees demand corresponding advances, and, if so, will they get them?

The advances in the wages of employees in train service have been relatively less since before the war than those of most other classes of employees. The increase in the average annual earnings of all employees other than engine and trainmen in 1925 over 1913 was 121½ per cent. The increase for engine employees averaged 94 per cent, and for conductors and trainmen about 108 per cent. Should the differentials between the wages of the various classes of employees be made the same as before the war, or the same as they were made in 1920? This is an important question, because if the differentials prevailing before government control ought to be restored, an advance in the wages of employees in train service would afford no argument for an advance to other classes of employees. If, on the other hand, it should be successfully contended that because some classes are now to be advanced 7½ per cent, all classes should be, the total resulting increase in wages would be about 215 million dollars annually, of which the western lines would have to pay more than 70 million dollars. This would postpone indefinitely the earning of the so-called "fair return," especially by the western lines, and also any reasonable reduction of rates.

What Will the Farmer Say?

The farmers have been complaining for five years that their income is too small compared with that of other classes of people. Every student of the subject agrees that this is true. The industry of the country is out of balance. The purchasing power of the farmer's dollar increased in 1925, but has since been reduced again by changes in price relations. What should be done to remedy these conditions is a very important economic and political problem. Undoubtedly high wages in industry are one of the principal reasons why the prices of most of the things the farmer has to buy are relatively higher than the prices of most of the things he has to sell. This unbalanced situation is bad not only for the farmers, but for general business. It is one of the principal reasons why the traffic of western railways is still less than in 1920, and that they are unable to earn a fair return.

The farmers have been appealing for some kind of relief by government action, but it has not been given. Suppose the farmers should say: "We have to sell our surplus products in the world's markets in competition with those of other countries. The government gives us no help in doing so. It discriminates against us in favor of the labor employed in our industries. It restricts immigration, thereby protecting American labor against the surplus labor of other countries, and raising the wages we must pay. We pay railway rates, which are largely determined by railway wages, and such wages already are relatively much higher, as compared with the pre-war level, than the prices of farm products. Congress passed the Watson-Parker bill creating a Federal Mediation and Conciliation Board. This government board appointed two arbitrators holding the balance of power in this railway wage arbitration. These arbitrators voted to award an advance in wages to railway employees. The government thus indirectly helped to raise the wages of railway employees. Why should it thus help to raise their wages, and refuse to help raise the prices of our products?" This is what many farmers are begining to say. What is the answer?

How Should Benefits Be Divided?

There are three classes that are directly interested in railway operation. Under efficient operation the benefits of the resulting economies should be so divided that security owners will receive a fair return, employees will receive fair and increasing wages and the public will receive fair and declining rates. The railways as a whole have not in any year since they were returned to private operation earned a fair average net return, but have been approaching the time when they would do so. Meantime, wages have been slowly increasing and rates have been slowly declining. The advance granted in the eastern arbitration is so large that if a corresponding advance were granted to all employees it would absorb two-thirds of the entire increase in net operating income that has occurred within the last three years. If there should be a substantial decline of traffic it would probably make the percentage of return earned less than in any year since 1922. This raises very directly the question of how the benefits of increased efficiency of operation should be divided between employees, investors and public. Needed capital will not be invested in the railways unless it gets a fair return. Unless it is invested the increase in "productive efficiency," which has been used as an argument for higher wages, will stop. Those who pay railway rates will, in the long run, become highly dissatisfied if increases in wages absorb those benefits of increased efficiency of operation which should, in the long run, take the form of reduction of rates.

Arbitration is the right method for settling labor controversies. But a right method may be so used as to produce wrong results. This seems to have been what was done in this case. It would be easier for others to form a rational and fair opinion of the result if the arbitrators who rendered the decision had not, from fear of criticism or some other cause, refrained from revealing how and why they arrived at it. The information presented to them and the arguments made regarding the relations that do or should prevail between railway wages, and wages in other industries, railway operating efficiency and its causes, the profits being made by the railways, and so on, offered them an opportunity to present the reasons for their award in a way that might have contributed something to the solution of the problem of the factors that should govern in the fixing of wages and the weight that should be given to each of them. They have rendered an award which will greatly embarrass the railways by causing claims for other large advances in wages to be pressed upon them, but they have contributed nothing toward the solution of the vital problem of how the benefits of increasing traffic and operating efficiency should be divided between railway employees, railway investors and railway patrons.

Ten Bids

THE New York, New Haven & Hartford has been authorized by the Interstate Commerce Commission to dispose of an issue of $4,995,000 4½ per cent equipment trust certificates to the First National Corporation of Boston at a price of 97.777. The New Haven usually does its financing through J. P. Morgan & Co. It is on record, however, as being given to innovations in railway finance. In April, 1925, a time when its credit was anything but good, it sold an issue of $23,000,000 6 per cent 15-year bonds direct without bankers' commissions, to the investing public in the communities along its lines with considerable credit to the public relations policy of its management. At about the same time it sold an issue of $3,645,000 equipment trust certificates but these it disposed of through its regular banking connections. The latter practice is not today, however, regarded with greatest favor by the Interstate Commerce Commission.

In the present instance, the New Haven having equip-

ment trust certificates to sell, took its problem to the Interstate Commerce Commission first. It was advised informally that to get competitive bids was the acceptable procedure. Accordingly, it asked the banking houses for offers and received no less than ten. The story is that the ten bids were forwarded on to Washington and the commission advised the acceptance of the highest—that of 97.777 made as above noted by the Boston bank. This price compares with 99.517 paid by Blair & Co. for the Central of New Jersey issue last August or 98,815 paid by Halsey, Stuart & Co. for the Illinois Central issue in October, both of which issues also bear 4½ per cent interest. Thus the commission proceeds with its interesting experiment to divorce the equipment trust business from the two banking houses that up to June almost had a monopoly of it, in the hope that the equipment securities may find a wider market or be sold at such prices that the carriers will be able to get their money on such standardized securities more cheaply. The New Haven will not succeed in getting its money as cheaply as did the Illinois Central or the Central of New Jersey, but, of course, its credit is not as good. It will get it cheaper than the Seaboard Air Line which recently sold its series Z 4½ per cent first lien equipment trusts without competitive bidding to Dillon, Read & Co. at 95¾.

The New Haven has gone much more than half-way in helping the commission to determine the right answer to the problem that the federal regulatory body has raised. The question that remains, is what luck the Boston bankers will have in disposing of the issue. There are rumors that some of the other issues sold through competitive bidding have not been placed with the investing public quite as rapidly as the successful bidders might have wished or expected.

Is Cost Accounting Feasible?

OFFICERS in all departments of a railway are interested in railway accounting. The best means that the responsible railway officer has with which to gage the performance of his department are the figures supplied him by the accounting department. The railway supply industry also has reason to be greatly interested in railway accounting. This has been brought out in a particularly striking manner during the past week or two through the fact that a group of companies in the supply industry—notably the car builders—have questioned whether the railroads might not be wiser to leave manufacturing entirely to manufacturing companies. One of the important factors in this question is the matter of costs which is an accounting problem.

The railroad world is at this moment studying a suggested tentative revision of the I. C. C. accounting classification which there is every reason to believe will be adopted without substantial change and made effective as of January 1, 1928. This classification is to be properly characterized as conservative. It does not depart in its essential characteristics from the present scheme of accounting on the basis of departmental activity. It contains nothing that will assist in any greater degree than the present classifications in cost finding or cost accounting. The failure to take steps to facilitate cost finding will undoubtedly be questioned not only because this matter has been brought up before but because it has been brought to the front at this particular time by the arguments offered by the American Railway Car Institute.

The new classifications were prepared by the Bureau of Accounts of the Interstate Commerce Commission with the co-operation of a committee of the Railway Accounting Officers' Association and the relationships have apparently of late become most harmonious. It is, for instance, of significance that the draft of the classifications which was given out by the commission was in the form of a report of the R. A. O. A. general accounts committee and was, except for the addition of a letter of transmittal by Director Alexander Wylie of the Bureau of Accounts, a bulletin issued by the Railway Accounting Officers' Association to its membership. It must be noted that the accounting officers have put themselves on record in this bulletin (*Railway Age* of December 4, page 1113) as having suggested many important changes that the Bureau of Accounts did not adopt but merely took under advisement. There were, however, also many such suggestions that were adopted. It may be that the commission declined to adopt the suggestions still remaining because when the same suggestions were made in a previous tentative classification a majority of the then committee on general accounts refused to accept them.

The revised classification does not contain any method of cost accounting. On the basis of what has been said it may be presumed that the commission and the accounting officers agreed that cost accounting was not desirable—possibly not practicable. Science of cost accounting has not yet gotten very far in railroad circles. Nobody has yet succeeded in producing a truly satisfactory scheme of cost accounting either for manufacturing in railway shops or as relates to the cost of carrying freight commodities. Still less has it been shown that any scheme of cost accounting could be established that would not be more expensive to conduct than the results obtained would justify. Apparently, however, the railway world thinks that something ought to be done about it.

It is a question as to how closely joined will be the discussion of the new classifications of accounts and that relative to manufacture in railroad shops. The matter of costs is so important in connection with the latter that the two issues can well be discussed together. Would not both situations be clarified if the accounting officers were to state unofficially or officially why the new classifications have kept to departmental accounting and why there is omitted anything in the nature of cost finding?

Specialized Supervision Yields Returns

A RAILWAY'S one product is transportation. It is the sole output of the entire organization. Every departmental activity is directed towards this one objective. Yet in the production of transportation activities of widely diversified character are necessary. As illustrations, the preservation of timber or the treatment of boiler waters may be cited. Each is in itself a highly specialized art far removed from the direct production if transportation, yet having a very important and essential relation to it. Because of their concentration on the major objective of producing transportation, railway executive officers may neglect these necessary auxiliary activities.

This condition is due primarily to the failure of the railways to maintain a sufficiently high quality of supervision of these specialized activities. It is common practice, when a road enters one of these specialized fields, to secure men of ability and experience to organize and place their activities on the proper basis because the lack of specialized knowledge within the organization

is then realized. Later, however, when these activities have settled more or less into routine, it is a too frequent practice, when a vacancy occurs, to endeavor to effect a saving in the cost of supervision by promoting a less qualified subordinate employee, in the mistaken belief that since the organization is already functioning it is only necessary to keep it going.

The fact is often overlooked that practically without exception these applied sciences are still in the development stage and that able leadership is necessary if this development is not to be stopped insofar as the individual road is concerned. This high character of supervision is all the more necessary by reason of the fact that the supervision of higher officers is limited because of the specialized character of the work.

The results of such practices are plainly evident. Take the illustration referred to above. In timber preservation the roads have lost a number of their leading authorities to commercial companies and to other industries of late, as a result of which development of the science of timber preservation may be retarded in spite of the fact that there are still many problems to be solved. Furthermore, on more than one road there has been actual retrogression in the care and treatment of timber, following the loss of a strong supervisory officer and his replacement by a man of less initiative and ability. In the field of water service similar loss is incurred on many roads by reason of the placing of the responsibility on other officers, commonly bridge and building men, who are already over-burdened, with the inevitable result that they look on water service problems as of secondary importance.

The illustrations cited are typical of numerous other specialized activities incident to railway service. They point to the fundamental importance of adequate and sufficiently efficient supervision of these highly specialized activities in order that the railways may derive from them the maximum benefits possible. Money spent for supervision in any branch of railway service is money well spent. It is particularly so with specialized activities which receive little or no supervision from executive officers.

New Books

R. A. O. A. Commodity Classification. 6 in. by 9 in. 180 pages. Bound in flexible cloth. Published by Railway Accounting Officers Association. Price $1.00.

The primary purpose of this publication is to assist the carriers in assigning the commodities in the 70 classes specified in the Interstate Commerce Commission's order regarding freight traffic statistics which are reported quarterly and annually to the commission and shown also in the carriers' annual reports to their stockholders. It thus serves to insure uniformity. The mere statement of the book's purpose will indicate that it is, of course, indispensable in the accounting department. It should prove of greatest value to the traffic department and is one of those books that the analyst needs at hand when he sets out to study in some detail the character of a road's traffic.

The commodities classified number some 3,000. The listing is given in two ways. In the first the commodity is listed alphabetically with indication of the class to which the particular commodity is to be assigned. In the second the commodities are listed by classes so that one may readily determine just what kinds of freight are meant when one refers to "Agricultural implements and vehicles other than automobiles" as distinguished from "Automobiles and auto trucks" or "Other manufactures and miscellaneous," etc.

This is the first edition of this book since 1920 and the supply of the previous edition has been exhausted for some years. Prior to the preparation of the present edition all carriers were circularized and asked for suggestions and the revision has been made in the light of the suggestions offered.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Depreciation Charges of Telephone Companies. Depreciation Charges of Steam Railroad Companies, by U.S. Interstate Commerce Commission. Decisions and orders in Dockets No. 14700 and 15100. 118 I.C.C. 295-411. Pub. by Govt. Print. Off., Washington, D. C. 10 cents.

First South American Railway Number—The Railway Systems of Argentina, by Railway Gazette Special issue dated November 22, 1926, and containing besides illustrated articles on the railways systems of Argentina, and maps, a directory of South American railways arranged by countries, giving names, mileage, gauge, headquarters and names of principal officers. 216 p. Pub. by Railway Gazette, London, England. 2s. 6d.

Traffic Management, by G. Lloyd Wilson. A practical presentation of the scope and functions and the details of administration of commercial and industrial traffic departments. 453 p. Pub. by D. Appleton & Co., New York City. $3.50.

Periodical Articles

Employee Representation on American Railroads, by Elva M. Taylor. Part IV reviewing the various plans for employees' representation and presenting conclusions. American Federationist, December 1926, p. 1483-1491.

"The First Hundred Years, Etc.," by W.H.D. Historical sketch of New England railroads. Illustrated. Current Affairs in New England, Nov. 29, 1926, p. 42-50.

Jones DOES Pay the Freight, by James E. Boyle. Freight rates from the farmers' and certain consumers' point of view. Nation's Business, December 1926, p. 22-24.

Our Inland Waterways: 1. The Need of River Traffic, by Herbert Hoover, *2. Completing the Mississippi System,* by W. F. Decker, and *3. Chicago's Diversion of Lake Water,* by A. M. Buswell. American Review of Reviews, December 1926, p. 595-612.

The Silent Revolution in Railroading, by F. S. Tisdale. Part IV—Recent achievements of Regional Advisory Boards and future problems. Nation's Business, December 1926, p. 28-30.

Who Should Bear the Expense of Repairing Railroad Cars?, by V. P. Ahearn. National Sand and Gravel Bulletin, November 1926, p. 11-14.

The Public Be Informed. An Interview with Judge Gary, by Rose Feld. Judge Gary states his attitude toward the subject matter of reports, and public relations generally. World's Work, December, 1926, p. 200-205.

Public Utility Depreciation Accounting, by L. R. Nash. Objections to depreciation accounts in accounting systems in force, and consideration of important problems in the light of present-day developments. Stone & Webster Journal, November, 1926, p. 580-603.

St. Louis-Built Locomotives, by Henry Miller. The first were some 22-tonners in 1853, the latest—No. 318 of the Terminal Railroad Association—and quite considerably larger, is described in this article. Executive's Magazine, 1st issue, November, 1926, p. 10, 14.

Can the Rails Now Finance With Stock Instead of Bonds? by Edward S. Purdy. Magazine of Wall Street, November 6, 1926, p. 32-33.

Experiences of a Locomotive Engineer, by Charles W. Kuhns. American Magazine, December, 1926, p. 42-43, 143-148.

Florida Transportation Field Survey by the United States Department of Commerce, by A. Lane Cricher. Summary of scope of survey and some of the findings. Proceedings, Fifth Regular Meeting. Florida Division, Southeast Regional Advisory Board, p. 25-48.

Letters to the Editor

[The RAILWAY AGE *welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.]*

Distinctive Colors for Trains

CHICAGO.

TO THE EDITOR:

I notice in the *Railway Age* of November 13 your reference editorially to the report of Committee 6 of the Equipment Painting Section on the ornamentation of cars and locomotives.

It is queer how easily these things are forgotten. I can remember when Frank Thomson was general manager of the Pennsylvania Railroad he painted the Pennsylvania Limited in very effective colors. For years the cars in that train were all maintained in this special color design. The Pennsylvania has always had a standard color different from other roads, and it is very handsome.

When I was elected president of the Chicago & Alton in September, 1899, the first thing I did was to order two trains for the Alton Limited, built at Pullman, with special color design, which is still kept up on that railroad. I had the locomotives handling the train painted to correspond. I know of no design that has been as effective or has attracted more public attention than that. It was an innovation at that time, because the Pennsylvania had gone back to its standard color for its limited trains, and the Alton Limited was the only train running into the union stations here in Chicago and St. Louis which had a distinctive color design.

On the Great Western, we have painted the Rochester Special—a non-stop train between the Twin Cities and Rochester—a maroon color. It has attracted a great deal of favorable attention, and if we did not have to interchange equipment necessitating our using Pullman cars of standard color, we would adopt a standard for the Great Western road, because I don't think there is any better advertising than that. It is important, however, that the engines be painted the same color as the cars, just as the English do. The four great systems in England each have a separate color and their passenger equipment is painted throughout, from the front of the locomotive to the rear end of the train, in the same colors. It is very effective indeed.

S. M. FELTON,
Chairman, Chicago Great Western.

Due Credit to Col. Wilgus

BANGOR, Maine.

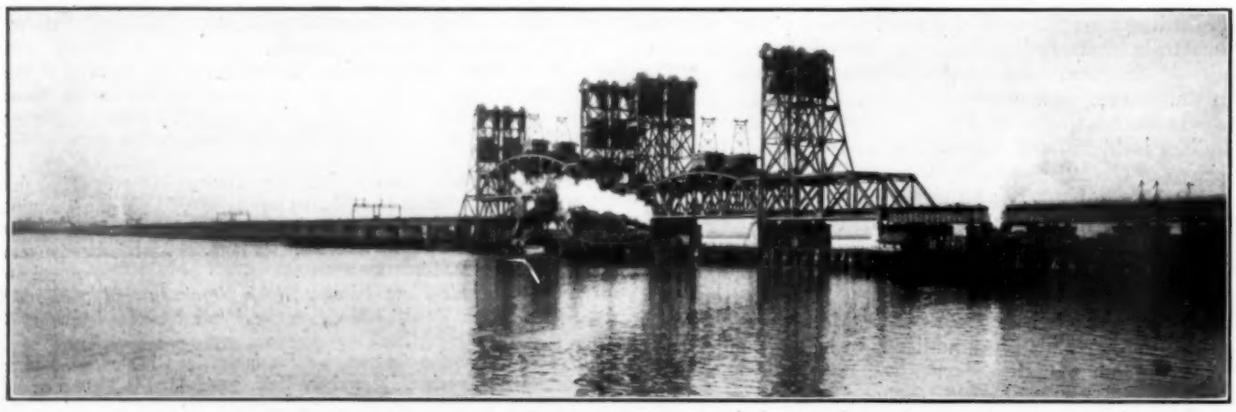
TO THE EDITOR:

A friend has just called my attention to an article in the New York Times of November 17, because at the time of the planning of the present Grand Central Terminal I was very much interested in the subject, both because at the time it was first conceived I held an official position with the West Shore, part of the New York Central System, and even more so because when I became vice-president of the New York, New Haven & Hartford, the interest of the latter company in the Grand Central Terminal was almost as great as that of the New York Central, and in both places I was in a position to know a great deal about the conception of this idea. I know that the original thought of what might be termed "building in the air" came from Col. W. J. Wilgus, at present a consulting engineer in New York City, but at that time chief engineer of both the New York Central and West Shore Railroads and later vice-president of the former.

Naturally I knew intimately W. H. Newman, who at that time was president of the New York Central and West Shore, and I know that he was rather startled by the extent of Mr. Wilgus' conceptions for the future and inclined rather strongly to oppose them but was brought around by Mr. Wilgus' views, which have been so amply justified in the nearly quarter of a century that has elapsed since he first conceived what the future results would be if his ideas were followed.

I am writing this to you because I remember some time ago there was an article in the *Railway Age* which as I recall it not only failed to mention Col. Wilgus as the originator of this plan but also rather intimated that no one conceived in 1901 or imagined the growth that would follow the building of the Grand Central Terminal or the great results that would follow therefrom and because I feel that unintentionally credit has not been placed for this conception where it belongs.

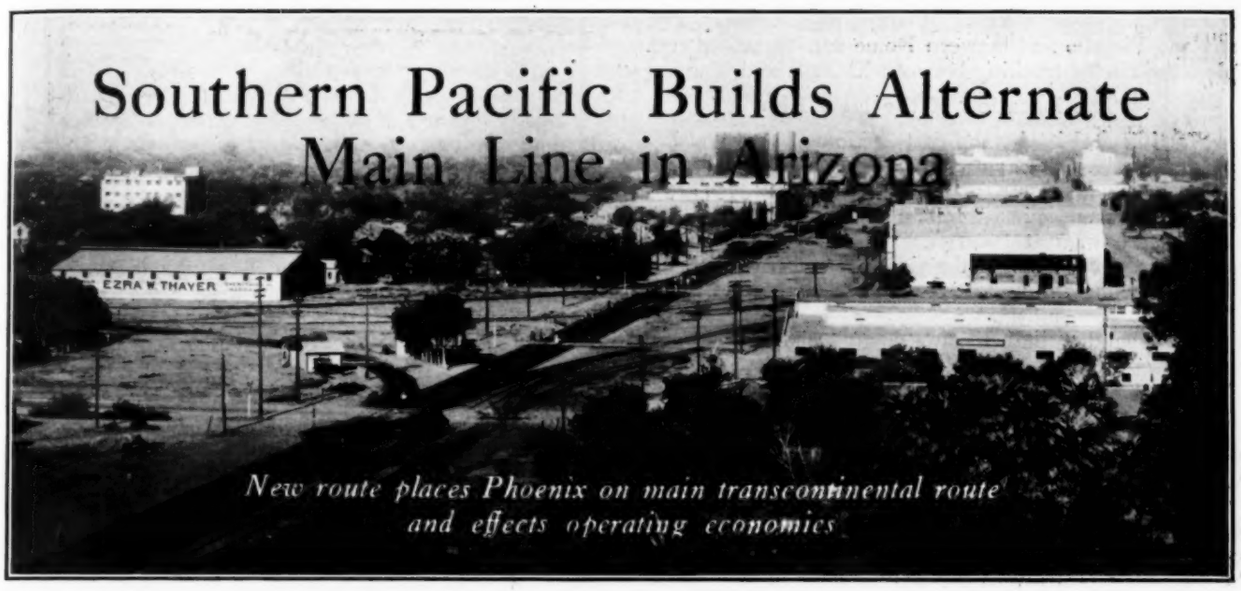
PERCY R. TODD,
President, Bangor & Aroostook R. R.



Underwood & Underwood

New Jersey Central Bridge Across Newark Bay Placed in Service November 27

Southern Pacific Builds Alternate Main Line in Arizona



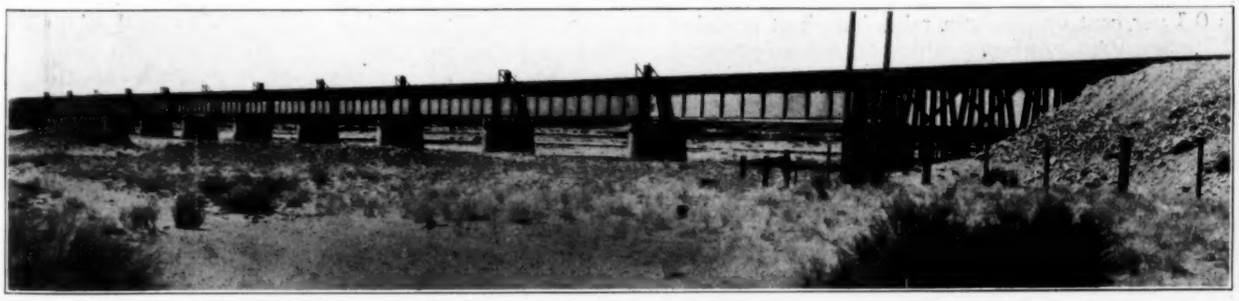
New route places Phoenix on main transcontinental route and effects operating economies

THE Southern Pacific has completed a new main line between Picacho, Ariz., and Wellton, at a cost of about $15,600,000, which places Phoenix on a main transcontinental route and which provides two single track lines, 168 and 210 miles long, substantially the equivalent of double track, between these points. The new line is 42 miles longer than the old line, but has lighter grades and less curvature. Two branches, aggregating 63.7 miles, were incorporated in the new route and constitute nearly one-third of its length, and the existing line was double-tracked from Wellton to Dome, Ariz., 18.3 miles. Two mountain ranges and four rivers were crossed, the bridges comprising an important part of the construction. Much of the territory through which the new line passes is undeveloped desert which entailed many difficulties in location and construction not met with in other sections of the country, but because the land is generally flat, the grading was light, amounting to only 3,595,000 cu. yd.

The purpose of the new construction was set forth by the late Julius Kruttschmitt in testimony before the Interstate Commerce Commission at its hearing on the application of the Southern Pacific to acquire the El Paso & Southwestern, when he stated that, "The cost of constructing the new line will be offset by savings gained by eliminating local train service that will become unnecessary, by short routing traffic from the mines near Magma (on the Hayden branch) and east thereof, and between Phoenix and southern California and, most of all, by avoiding double tracking of the main line of the Southern Pacific now imminent." Commercial interests and the public service commissions of Arizona and New Mexico favored the consolidation of the two systems, but in reply to direct questions from the Interstate Commerce Commission they indicated that their approval was contingent upon the construction of the new line.

The old line passes south of Phoenix, the capital of the state, which has been reached by a branch 35 miles long, a situation which has caused delay to passenger and freight traffic and required a heavy local train service. In the Casa Grande valley and north of the Gila river the new line opens large areas of fertile land which are not now developed because of lack of transportation. Also a short connection, 6.1 miles long, to Florence materially reduces the haul on a heavy tonnage originating on the Hayden branch.

Besides the traffic which originates locally, and which will increase with the development made possible by the new rail facilities, substantially all of the enormous crop movement from the Imperial Valley and much of the fruit from southern and central California going to eastern markets, as well as a heavy tonnage of non-perishable freight moving east, passes over the Southern Pacific between Yuma and Tucson. All of the transcontinental freight originating on the Atlantic system of the Southern Pacific and that received from the Rock Island at Tucumcari, N. M., and from the Texas & Pacific at Sierra Blanca, Texas, must also be hauled between Tucson and Yuma. At Yuma the routes divide, one line going through the Imperial Valley to San Diego, and the other to Los Angeles and San Francisco. East of Tucson the consolidation with the El Paso & Southwestern gave the Southern Pacific alternate lines to El Paso, so that, with the completion of the line through Phoenix, there



The Hassayampa River Is Crossed on a Deck Plate Girder Structure

remair only short stretches of single track between Tucson and Picacho and between Dome and Yuma, to complete the double tracking between El Paso and Yuma.

The Location of the New Line

Starting at Picacho the first section of the new line, about 49 miles long, runs almost due north to the Gila river, which it crosses, and then turns northwest across the Gila River (Pima) Indian reservation to join the Chandler branch at Pozo Junction, 1½ miles south of Chandler. Just north of the river the cutoff to Florence, 6.1 miles long, connects the new line with the Hayden branch.

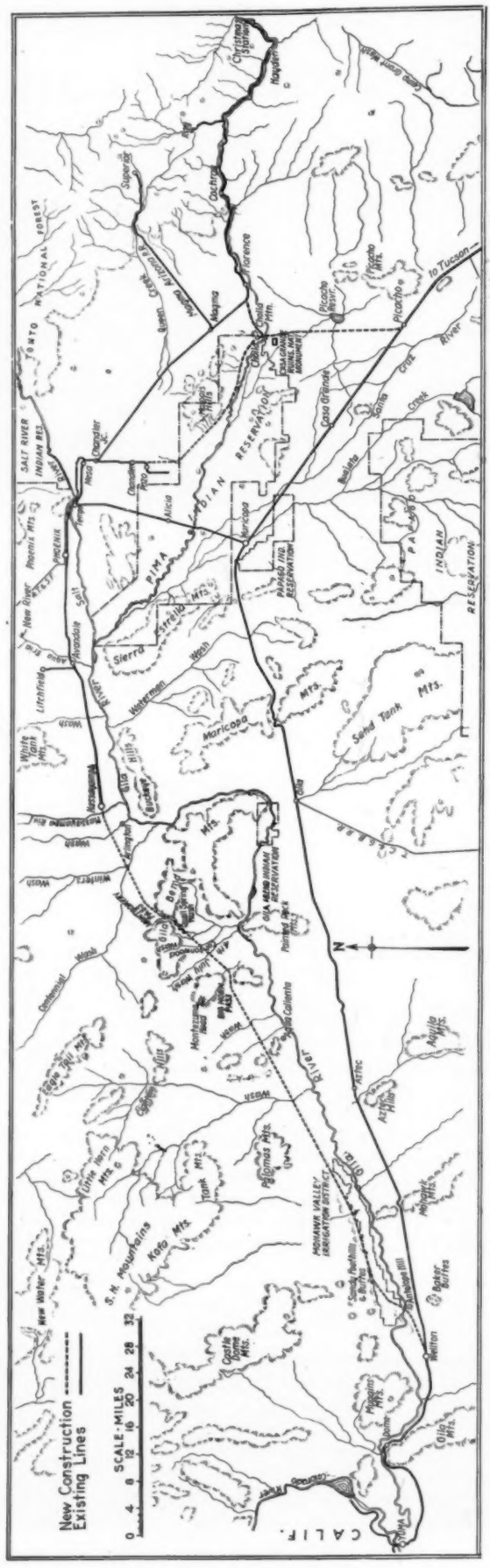
The Chandler branch runs north to Mesa, and then turns west, passing through Tempe, where it crosses the Salt river and then runs to Phoenix. From that point the new route utilizes the Hassayampa branch which runs slightly south of west from Phoenix, crosses the Agua Fria River at Avondale and extends to Hassayampa, paralleling the Salt and Gila rivers. The new construction begins again at the east bank of the Hassayampa River near its junction with the Gila, but as the Gila turns sharply to the south for about ten miles to pass around the southern end of the Gila Bend mountains, the new route lies some distance north of the stream until it reaches Antelope Hill, seven miles east of Wellton. Here the second crossing of the Gila is made and the new line then runs south of the river until it joins the old line at Wellton. The distance from Hassayampa to Wellton is 96.67 miles, and the total length of the new line, including the two branches which have been incorporated in it, is 209.7 miles.

Character of the Country

From Picacho to Hassayampa the country is flat except for low mountain ranges that rise abruptly from the mesa, so that a maximum gradient of 0.5 per cent was established without difficulty. This gradient is continued west of Hassayampa until the ascent toward the eastern slope of the Gila Bend mountains begins. Immediately east of this range the land is generally flat, but rises at a nearly uniform rate of about 0.6 per cent and, because the topography is nearly uniform, no development of the line was necessary to obtain a gradient of 0.6 per cent except for a short distance immediately east of Montgomery Pass, which is a low but narrow and tortuous opening through this range.

The country to the west of the mountains drops away sharply and is broken by a number of washes which carry large volumes of water late in the winter and spring and when cloudbursts occur in the mountains. The location west of Montgomery Pass was one of unexpected difficulty and a number of preliminary lines were necessary before the final location could be determined. For six miles west of the pass the gradient is 1.0 per cent and considerable development of the line was necessary. From the foot of this grade the mesa generally is flat, though cut by smaller washes as far as the Big Horn mountains. In this section the gradient is 0.3 per cent or less, generally, but short stretches of 0.5 momentum gradients, which do not affect tonnage, were introduced at a number of points.

The pass through the Big Horn mountains is at the general level of the mesa, and only a slight divergence of the line was necessary to reach the gap. West of the Big Horn mountains the slope toward the Colorado River is more pronounced but does not require gradients in excess of 0.5 per cent and those in excess of 0.3 per cent are momentum grades. In this section the topography is somewhat choppy and washes are more frequent, though not so wide as in the flatter country. At several places escarpments, nearly parallel to the river,



The New Line of the Southern Pacific Through Phoenix

restricted the location but did not require wide divergence from the general line. In the vicinity of Antelope Hill several miles of sand hills were encountered and the location became more difficult but, as elsewhere beyond the descent immediately west of the Gila Bend mountains, a maximum 0.5 per cent gradient was maintained.

The region through which the new line passes consists generally of a flat plateau diversified by isolated buttes and short mountain ranges of volcanic origin which rise abruptly from the mesa without foothills and run in a general northwest and southeast direction. From Picacho to Montgomery Pass the elevation above sea level drops gradually from 1600 ft. to about 1000 ft.

Looking North at the First Crossing of the Gila River

From Montgomery Pass the altitude decreases more rapidly toward the Colorado River which, at Yuma, is only 139 ft. above sea level. The Gila River is the largest stream encountered and the Salt River is its largest tributary. The Agua Fria and Hassayampa rivers flow into the Gila west of the junction with the Salt River. No streams of consequence were encountered but many washes occur west of the Hassayampa.

The Bridges Were an Important Part of the Work

These rivers all have the same characteristics. During the greater part of the year they have no surface flow, except the Salt river which has a little water from the seepage of the irrigated district through which it passes. All have heavy drainage grades and quick run off in their upper reaches. Severe cloudbursts occur frequently in the mountains where they have their headwaters. When they occur, and late in the winter and early spring when the snow is melting and it rains, these streams rise rapidly until the water is about 15 ft. deep and they become raging torrents. The same is true of the washes, which are dry except at times of heavy rain. At such times the volume of water is large and the velocity of the flow is very high. Because of this condition and the number of river crossings, the bridges formed an important part of the construction.

The upper bridge over the Gila consists of nine 150-ft. through riveted single track truss spans with 45 ft. of ballast deck creosoted pile trestle at either end. The concrete piers are of the twin cylinder type extending to bed rock 50 ft. below the bottom of the river or 72 ft. below the base of rail. The cylinders are connected by reinforced concrete diaphragms from the bridge seat down to the river bed. The original plan was to sink the foundations by means of open cofferdams, and for this purpose the Lackawanna steel sheet piling was driven. It was necessary to abandon this method, however, because quicksand and water were encountered in large quantities. Although the Gila is fed at its headwaters by springs and a continuous, though normally small, run off from the mountains, it has no surface flow except at the times mentioned, but, owing to the porous sand and gravel strata which underlie its bed there is, apparently, a heavy subsurface flow of water. While the first of the foundations were under way a cloudburst in the mountains caused a sudden flood which destroyed a practically complete open cofferdam in which no concrete had been placed, and it was not considered safe to proceed with the open excavation. For these reasons it was determined to use the pneumatic method and a contract for the foundations was let to the Missouri Valley Bridge & Iron Co. of Leavenworth, Kan. No difficulties were encountered by the contractor except those presented by the quicksand and subsurface water and the piers were completed according to schedule.

At Mesa there was already a substantial bridge over the Salt river and it was necessary only to change the open deck pile trestle approaches to ballast decks to conform to the standard of main line construction. At Avondale the existing timber trestle over the Agua Fria was too light to accommodate main line power and it was replaced by a heavier structure. To avoid disturbing traffic the position of the new structure was shifted just far enough south of the original bridge to clear it. The oblong piers, which rest on bed rock about 40 ft. below the river, were constructed in open cofferdams by the Utah Construction Co. Long ballast deck creosoted pile trestle approaches at either end give additional water way when the river overflows the bottoms during extreme flood conditions. The five channel spans are duplicates of those at the upper crossing of the Gila river. A small offset in the alignment was required east of the bridge while at the west end the re-alignment of a curve eliminated the offset.

The branch line west of Phoenix ended at the east

The Track Is Constructed to High Standards

bank of the Hassayampa river. When this stream is dry vehicles can cross the sand and gravel bed without difficulty, so that the contractors' equipment for work west of the river was unloaded at Hassayampa before the bridge was started and taken overland to the point of use. Unlike most of the streams in this vicinity, however, the banks of the river at the point of crossing are rather abrupt and, as the grade is well above the river, deck plate girders were used.

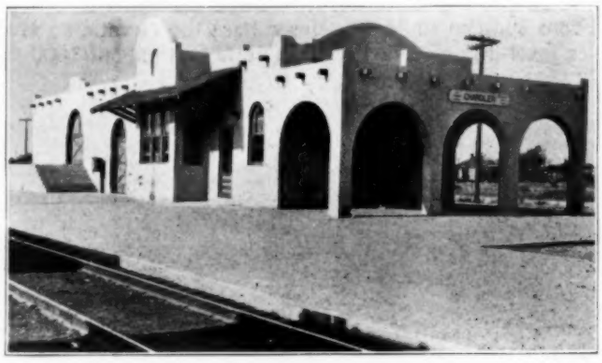
The river has no subsurface flow and the material below the bed is a well compacted and cemented coarse sand mixed with pebbles. For this reason the foundation problem was simple and cofferdams only were required. In fact, several of the foundation pits could

have been put down without the use of sheeting. The solid concrete piers rest on rock about 30 ft. below the bottom of the channel.

The superstructure consists of eleven 80-ft. deck plate girders and creosoted ballast deck pile trestle approaches which extend from the channel spans to the embankment at both ends. The high banks defining the Hassayampa are several hundred feet away from the main channel, and this necessitates high fills between the bridge and the banks of the river. The river rises rapidly, submerging the narrow bottom, and flows with a high velocity. To avoid danger of the embankment being washed out a six foot layer of heavy riprap has been placed to an elevation above any probable flood stage. At a number of other points riprap was considered necessary because of the sudden rises which occur.

The second crossing of the Gila is on Antelope hill. Here the foundation problem was the most difficult on the whole work. The rock, which at the center of the channel lies about 80 ft. below the bed of the river, dips sharply to the east. The material generally was a very compact cemented gravel saturated with water. The pneumatic method was employed on all piers and some were sunk to a depth of 80 ft., although only about half of those in the channel were landed on rock. The remainder are supported on hard strata of cemented gravel. The westerly two piers and the westerly abutment rest on an ancient lava flow which apparently followed a former channel of the river. Indications were that the bridge site is near the end of the flow as many granite boulders and smaller stones were embedded in the surface of the lava.

The superstructure consists of twelve 150-ft. through riveted spans, duplicates of those at the upper Gila crossing. A ballast deck creosoted pile trestle approach 300 ft. long was built at the east end. About 150 feet



Combination Station at Chandler

west of the west abutment the line crosses over a highway by means of a two-span deck plate girder bridge. The Missouri Valley Bridge & Iron Co. built the foundations for this structure.

The only other bridges of consequence are the five structures over Quail Springs wash. The first crossing of this wash occurs just west of the summit of Montgomery Pass where the bridge consists of three 60-ft. spans of deck plate girders. The next three crossings to the west are duplicates of this structure, but the fifth and lowest crossing consists of three 50-ft. deck girder spans. It might seem surprising that the shorter spans are used at the lowest crossing. The reason for this, however, is that this crossing is made at right angles and the shorter girders give a slightly greater waterway than the longer ones further up the wash.

Where small washes were crossed concrete culverts, creosoted ballast deck pile trestles, or composite structures consisting of concrete piers and creosoted ballast deck superstructures were used. The concrete work for these bridges was done by contract. All piles were driven by company forces and cut off by the contractor. Gravel from the bed of Salt river was used as aggregate for the concrete. Water was scarce and had to be hauled long distances. In the dry atmosphere and intense heat great care was necessary to prevent the concrete from drying out too rapidly. For these reasons and because of the difficulties of transportation before the track was laid, timber trestles were used to a larger extent than would have been done otherwise. The total amount of concrete used, including the bridge piers on the larger structures, was 40,000 cu. yd.

The Lower Crossing of the Gila River at Antelope Hill

The Grading Was Light

Because the country is flat generally, the grading was light and most of it was done with graders, dump wagons, and Fresnos. Steam shovels were used only in Montgomery Pass, through the sand hills already mentioned, and between Wellton and Antelope Hill. In the hot desert country the air contains practically no moisture during the summer months, and temperatures of 120

to 130 deg. are common, while occasionally the thermometer reaches 135 deg. During such periods it is impossible to work either horses or mules, and in 1925 all grading operations were abandoned for three months.

The total amount of material moved in the grading was 3,595,000 cu. yd., of which 2,700,000 cu. yd. was earth, 510,000 cu. yd. cemented material and 385,000 cu. yd. solid rock. These quantities include the branch line from Poston to Florence and the double tracking of the present line from Wellton to Dome. Almost all of the material classed as earth was desert clay or loess. Sand and gravel were encountered in small quantities near the streams and on the five miles east of Antelope Hill much of the material was sand. The only place that rock was encountered was at Montgomery Pass. While the loess seemed to be very compact when in its natural bed, the shrinkage was very heavy when it was placed in embankments.

Other Construction Standards

The track is laid with 90-lb. rails on creosoted ties with tie plates. At Poston, at the upper crossing of the Gila river, a quarry was opened on the south side of Cholla mountain to obtain ballast. The track was laid south from Chandler to reach the quarry, and the first raise was made with gravel from the bed of the Salt river. The final raise on this stretch of track was made

Community Houses for Section Men

partly on stone from the Cholla quarry, partly with slag from smelters at Bisbee and on the Hayden branch, and in part with gravel. West of Phoenix the first raise was made on stone from the Cholla quarry, and from a quarry opened at Montgomery Pass, and topped off with smelter slag.

As might be expected in the desert country the water supply was a major problem as water stations are to be spaced about 20 miles apart There are no surface supplies from which to draw, and in the few instances where water can be secured from shallow wells it is so highly impregnated with alkali as to be unfit for boiler or domestic use. It became necessary therefore to resort to deep wells for both the locomotive supply and for domestic use at section headquarters. These wells vary in depth from 600 ft. to 1,000 ft. generally, but in a few instances it was necessary to go as deep as 1,300 ft. before a dependable flow was obtained. At these depths the water is usually soft and does not require treatment.

Where the water rises high enough in the wells, deep well pumps, driven by oil engines, are used. Elsewhere air lift equipment, with Ingersoll-Rand compressors, is employed to bring the water to the surface. At section headquarters deep well pumps operated by 1½ hp. gasoline engines are used. Here the water is pumped to a 3,000 gal. storage tank, suppported on a thirty foot tower, from which it is distributed to the several buildings housing employees.

Comfortable frame houses covered with asbestos shingles have been constructed for the foremen. These houses are equipped with sanitary plumbing, toilets, bath, and kitchen sinks. Mexican labor is used on the sections and two four-family houses are provided at each section headquarters for their use as it has been found that this type of labor favors community houses rather than single family houses, the buildings therefore are designed with quarters for your families and are constructed of hollow tile with asbestos shingle roofs and concrete floors. They are rectangular in plan with a wide longitudinal hall and a narrower hall running transversely. There is no outside entrance but access to the family quarters is from the hallways. The hollow tile construction, with wide overhanging eaves, and open hallways, gives a building of maximum comfort in the hot climate. The two houses provide for a minimum of eight men to the section.

The general headquarters of the engineering corps was at Phoenix. Camps for the residences were established where water was available rather than at the points most convenient to the work. Each party was equipped with motor buses and trucks to enable the men to get about over the work. The contractors were not able always to establish their camps close to the few springs which exist and in most instances it was necessary for them to haul the water they used.

Passing sidings were located at about five mile intervals and the yard at Phoenix was enlarged. Effective November 14, trains Nos. 1 and 2, the Californian, were diverted over the new line through Phoenix, westbound at Picacho and eastbound at Wellton. At the same time, freight operation was started over the new line, with freight trains handling all commodities to and from Phoenix and contiguous territory.

Freight crews run from Phoenix to Yuma and to Tucson. With the routing of freight trains over the new line the large number of runs between Maricopa and Phoenix will be discontinued and freight shipments will now move direct to destination without the necessity of the former branch operation to Maricopa. With the new service, freight loaded in the evening at Los Angeles is now ready for delivery at Phoenix at 8 a. m. the second morning.

C. E. Crowley of Los Angeles did the grading between Phoenix and Chandler while the Utah Construction Company had the contract for the grading between Hassayampa and Wellton. Palmer and McBride of San Francisco constructed the concrete culverts and the piers and abutments on the composite structures, cut off all piles and placed all timber decking on the ballast deck bridges. All of the steel bridges were fabricated by the American Bridge Company at its Ambridge plant, and the erection was done by Joe Gerrick & Company located at San Francisco.

The whole project was carried out under the direction of G. W. Boscke, chief engineer. The preliminary and location lines were run by Russell Chase, locating engineer. A. J. Barclay, assistant engineer, was in charge of construction.

EMERGENCY HEADLIGHTS are now provided on the Middle division of the Pennsylvania, one headlight in each signal tower. When the headlight of the locomotive of a passenger train fails on the road, the engineman, instead of stopping at once, and perhaps causing considerable delay, calls at the first signal tower and gets an emergency lamp, which is fitted to hang on the number plate at the front of the boiler. The emergency light is one of considerable illuminating power, fed from a dry battery. It is proposed to instruct freight enginemen, as well as those on passenger trains, to make use of these lights when needed.

Transportation Division of the Department of Commerce

By Norman F. Titus
Chief, Transportation Division, Bureau of Foreign and Domestic Commerce

THE Transportation Division includes the field of communications; it deals with railways, shipping, shipbuilding, inland waterways, highways, motor transport, packing, warehousing, storing, as well as the various forms of communication—postal, telegraph, telephone, and radio; also the transportation aspects of aviation.

In order to handle adequately such a diversified program, and not become jacks-of-all-trades and masters of none, we have divided the division into sections, each section being in charge of a specialist with trained assistants. Thus we have a section on shipping, another on railways and highways, one on packing, still another on aviation and communications, and so on. By specialized organization we are able to cope with this great range of activities.

The original conception of the division was the establishment of a body to aid exporters in selecting the best shipping routes and to furnish complete information on freight rates. These are still important functions of the division, but the field of operation has expanded far beyond these two services. At the present time, the division aids commerce and industry by compiling complete data on all branches of transportation and communication, both at home and abroad. It has compiled books relative to motor roads and railways in numerous foreign countries; booklets on inland waterways, steamship conferences, ocean freight rates, bills of lading and government aids to shipping; bulletins on packing, warehousing, and storing; also on transportation of perishables. Economic studies are pursued, a typical investigation this year being an economic survey of the project for a deeper waterway from the Great Lakes to the Atlantic.

The division has established and maintained close contacts with the newly formed Regional Advisory Boards of the American Railway Association. At the request of the Florida Regional Advisory Board and the Florida State Chamber of Commerce, the division conducted during the year a transportation field survey for that state.

In addition to these surveys and bulletins, extensive articles on transportation and communications are contributed weekly to "Commerce Reports," the official organ of the Bureau. Furthermore, four news-letters are issued each week on foreign aspects of railways, shipping, highways, and aeronautics; also a bi-weekly news-letter deals with matters relative to communications. In addition to these activities, thousands of letters are received annually, in which business men present transportation problems. These are given prompt attention and solutions furnished.

We are familiar with the fact that American industry leads the world. Analyzing these achievements, however, discloses that they are mainly the perfection of production. In spite of such distinctive achievements in production, engineers, to a large extent, have overlooked another vital factor—namely, distribution. It is just as necessary to achieve straight-line distribution as it is to achieve straight-line production. The opportunities for waste and inefficiency are present in large numbers in the movement of goods to the buyer. In this cycle we have—

Movement of goods to the shipping department at the factory.
The container and interior packing materials.
The process of packing.
Cartage to railroad or pier.
Line haul of railroad or ship.
Multitudinous handling of transportation company (loading, unloading, etc.).
Cartage from carrier to buyer.
Handling in buyer's receiving room.

Of these operations of packing, handling, and transportation, the transportation company receives but a small per cent of the cost involved, the larger portion being within control of shipper or buyer. The facts of the case are, however, that the average shipper is inclined to consider but two elements of expense—line haul and loss and damage claims. Within the last five or six years the railroads have made remarkable progress, their loss and damage claims having been reduced from $120,000,000 in 1920 to $38,000,000 in 1925. It is high time that shippers were aroused to their responsibility concerning the factors within their own control. Those firms that have focused the same attention and skill upon distribution as they have upon production have achieved astonishing results. Packing, warehousing, storing, and transport outside of the line haul are matters for the attention of the most-highly trained engineer; such attention is a big dividend producer.

Some firms have reduced their container material one-half and have obtained a stronger package, others are using five or ten tons of extra lumber daily in packages and paying freight on this extra weight as well. Other firms have gangs of laborers piling goods when half the number with tiering machines could do the job.

* From an address before a conference of Chemical Executives at Washington, D. C., on December 6, 1926.

Secretary Mellon On Railroads

WASHINGTON, D. C.

"THE railroads are one of the principal factors in the strength of this country," says Secretary Mellon in the annual report of the Treasury Department. Referring to the improved economic position of the country during the past year he says: "The most notable improvement has been the restoration of the railroads to their proper place in the community. They are beginning to make up for losses following government control. Their credit is good and their efficiency is of the highest order. Their ability to handle traffic promptly and efficaciously is evidenced by the increase in carloadings and by the practice of hand-to-mouth buying and curtailed inventories of manufacturers and dealers, which would not be possible with less effective transportation."

The report shows that the total principal amount of railroad obligations owned by the government as of June 30, 1926, which were acquired under the federal control and transportation acts, was $299,112,850, a reduction of $17,187,473 during the year. Of this $950,600 represented payments on account of equipment trusts, $5,919,609 payments in connection with settlements for the federal control period, and $10,317,264 repayments of loans. Nine carriers are named as being indebted to the government in the amount of $3,253,635 on account of overpayments on account of their six-months' guaranty for 1920, which are being made the subject of litigation.

Mechanical Engineers in the Railroad Industry*

Railroads supply 43 per cent of the executive, technical and sales officers of supply companies

REALIZING that many mechanical engineers have a pessimistic viewpoint as to the opportunities afforded them in railroad work; that the industry is evidently not getting its proper share of the better mechanical engineering talent from the technical schools, and that many mechanical engineers eminently fitted for railroad work are entering other fields of endeavor, the Railroad Division, A. S. M. E., is undertaking the collecting and assembling of facts and information, with the following primary objects in view:

1—To assemble facts pertaining to the railroad and railway supply industries in order to assist the young mechanical engineer to a knowledge of the industry as it affects him personally.

2—To give technical schools and colleges a source of reliable and accurate information with which they can be of service to students contemplating entering railroad or railway supply work.

3—To have available for the members of the American Society of Mechanical Engineers a source of fact information with which the Society as an organization or its individual members can render real service to the young mechanical engineer.

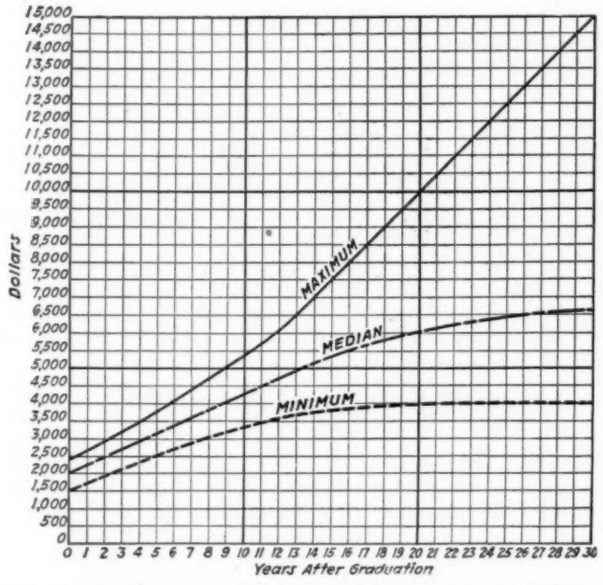


Chart Showing the Earnings of Mechanical Engineers Employed by Railroads Up to and Including the Position of Chief of Motive Power

The scope of the sub-committee's work includes both the railroad and railroad supply industries. Approximately 43 per cent of the executive and technical officers and sales staff of railway supply concerns promoted since December, 1919, have been recruited from the railroads. It is estimated by reputable authority that for every man in railway service, there is another at work making materials the railroads buy. It is, then, quite natural that the railroad supply industry should select good men for its executive and sales staff from the railroads. Therefore, the work of the sub-committee would not be complete without considering both industries.

* Abstract of a progress report presented by the Sub-Committee on Professional Service of the Railroad Division at the annual meeting of the American Society of Mechanical Engineers, December 7, 1926.

Facts Relative to the Railroad Industry— Comparison with Other Industries

There are 1,023 railroads in the United States and Canada, about 190 of which are Class I railroads. The Class I railroads operate approximately 90 per cent of the total railway mileage in the United States and earn about 96 per cent of the total revenues. According to the Monthly Labor Review, published by the Bureau of Labor Statistics, there were employed during one week in July, 1926, a total of 1,816,818 men and women. A comparison of this figure with the number employed by other industries during the same period is given in Table I. The second largest industry, according to the number

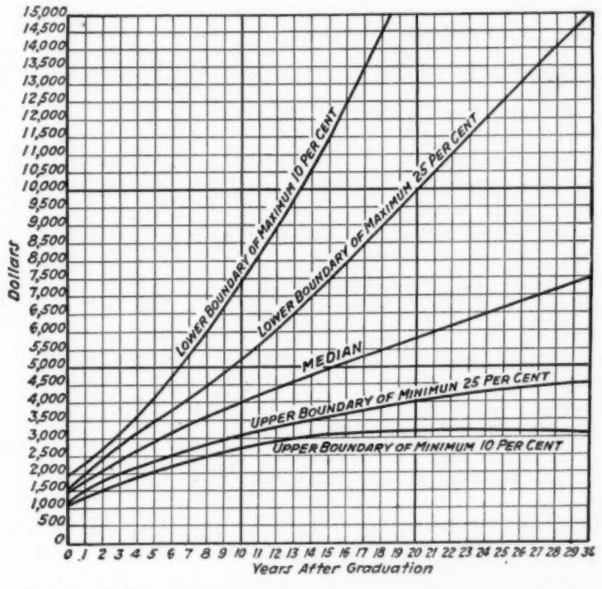

Dollars
LOWER BOUNDARY OF MAXIMUM 10 PER CENT
LOWER BOUNDARY OF MAXIMUM 25 PER CENT
MEDIAN
UPPER BOUNDARY OF MINIMUM 25 PER CENT
UPPER BOUNDARY OF MINIMUM 10 PER CENT
Years After Graduation

Chart Showing the Earnings of Engineers in all Industries by Years After their Graduation from Universities and Colleges

TABLE I.—COMPARISON OF EMPLOYMENT IN 13 GENERAL GROUPS OF INDUSTRIES, DURING ONE WEEK, JULY, 1926*

	Number of Establishments	Average Number of Wage Earners
Railroads ..... Total Class 1		1,816,818
Iron and steel, and their products	1,815	688,471
Textiles and their products	1,858	546,560
Vehicles for land transportation	971	483,843
Miscellaneous industries	408	264,375
Lumber and its re-manufacturers	1,048	209,582
Food and kindred products	1,480	206,535
Paper and printing	880	164,157
Leather and its finished products	368	119,790
Stone, clay and glass products	638	112,084
Chemicals and allied products	277	87,459
Tobacco manufacturers	199	43,256
Metal and metal products, other than iron and steel	206	49,578

* Monthly Labor Review.

employed, is the iron and steel industry, the textile industry being third.

Figures showing the proportion of technical graduates, and for our purposes mechanical engineers, to the total number employed, would be of value in this table. The sub-committee has not, however, found any source from which such information could be obtained. A general idea of the number of supervisory positions in which mechanical engineering training would be of service is shown in Table II. Care should be used, however, in the use of the total figure due to the fact that many of the executive and staff officers fill positions requiring legal, medical or business training. Furthermore, this total does not include special apprentices or minor mechanical department officers.

TABLE II.—NUMBER OF EMPLOYEES HOLDING POSITIONS WHERE MECHANICAL ENGINEERING TRAINING WOULD BE OF SERVICE, JUNE, 1926, ON CLASS I RAILWAYS IN THE UNITED STATES*

Executives, general officers and assistants	7,431
Division officers, assistants and staff assistants	9,372
Architectural, chemical and engineering assistants	7,377
Subprofessional engineering and laboratory assistants	3,968
General foremen (M. of E.)	1,466
Total	29,614

* Includes 16 switching and terminal companies. Data obtained from Wage Statistic Report, Interstate Commerce Commission.

A Study of the Careers of Railway Officers

Being president of a railroad is, of course, not strictly an engineering position, but there are ambitious young mechanical engineers who are aiming for such a position. An analysis of the careers of the presidents of the more important Class I railroads contains much information of interest and value. Table III contains an analysis of the careers of the presidents of 79 Class I railroads. Out of the 79 presidents, 34, or 43 per cent, are college graduates, 12 had a high school or equivalent education and 33 had only a common school education. The figures shown in the left hand column for those who worked in various departments will total more than 79, because the majority worked in several departments before becoming presidents. Only three railroad presidents out of the 79 have worked in the mechanical department. The college graduates are Gen. W. W. Atterbury of the Pennsylvania, H. J. German of the Montour and Henry Miller of the Terminal Railroad Association of St. Louis. The principal facts to be obtained from this analysis is that the mechanical engineer must compete for executive positions with men trained not only in the other engineering professions, but in the legal profession and in business as well.

TABLE III.—CAREERS OF THE PRESIDENTS OF 79 CLASS I RAILROADS

	Total	Common School	High School or equivalent	College Graduate	College Grad., per cent
Education, total	79	33	12	34	43
Dept. in Which Trained					
Executive, financial, legal	63	29	6	28	44.4
Accounting	4	3	1	0	0
Traffic and claims	13	8	4	1	7.7
Operating and telegraph	42	22	9	11	26
Purchasing	5	2	2	1	20
Mechanical	3	2	0	1	33
Engineering, bridge and signal departments	25	9	2	14	56

Table IV shows the results of a study made of the railroad careers of 25 railroad officers in 6 different grades. The right hand column of the table shows the number of years gained by the college graduate in reaching each position listed, in comparison with the time required by the non-college man to reach the same position. The officers, selected at random, are all employed by Class I railroads. The average age of the superintendents of motive power selected, the highest position on a railroad requiring mechanical engineering training, is 43.8 years. By taking the average time spent in railroad service by the college-trained officer and the time spent by the non-college trained and substracting, we obtain the figures shown in the right hand column.

The good operating man seldom finds it desirable to leave railway service to work in any other industry. When he does, it is to take a good position where the executive qualities of leadership bring him greater reward. There have been few instances where a good operating man has left railway service. The "ten-talent" man in the operating department is almost certain of recognition.

TABLE IV.—AVERAGE AGES OF 25 OFFICERS IN EACH GRADE SHOWN. TIME REQUIRED TO REACH CERTAIN POSITIONS AND TIME GAINED BY COLLEGE GRADUATES

	Average age	Ave. Time in R. R. Service	College trained, per cent	Average time for non-college man	Avg. time for college graduate	Time (yrs) gained by college graduate
President	58.3	30	53	34	24	10
Vice-president	50.8	28.1	48	30.7	25.2	5.5
General manager	49	30.5	16.8	31.4	26.2	5.2
Sup't. motive power	43.8	25.8	44	29.5	19.9	10
Mechanical engineer	35	13.75	80	14.6	13.5	1.1
Master mechanic	47.4	22.7	20	24.1	15.2	9.4

As shown in Table III, the engineering or maintenance of way department is another that has always seemed to have received proper recognition. Many railroad division engineers or chief engineers have succeeded in stepping over into the operating department and have thus proceeded on their way to the top. The list of railway presidents who started in railway service as rodmen or transit-men is quite a long one. This information is of interest to mechanical engineers whose technical education is similar in many respects to that of the civil engineer.

The Mechanical Department

No less than 25 per cent of all railway operating expenses and from one-half to two-thirds of the expenditures for capital improvements come under the jurisdiction of this department. The January 2, 1926, issue of the *Railway Age* reports that 35 per cent of the total appropriation for capital expenditures for the first nine months of 1925 went for equipment. This shows that the job of the mechanical department officer is one of importance and great responsibilities and requires men capable of exercising mature judgment.

TABLE V.—YEARS REQUIRED TO REACH CERTAIN POSITIONS IN THE MECHANICAL DEPARTMENT

	Longest time	Shortest time	Average
General S. M. P. or head of mechanical department	49	10	22.8
Assistant or division S. M. P.	36	7	18.8
Mechanical engineer	33	4	15.2
Assistant mechanical engineer	11	4	8
Engineer of tests	19	5	9.75
Engineer of motive power	24	7	18

This statement is undoubtedly emphasized by the figures shown in Table V, which shows the years required to reach certain positions in the mechanical department. One mechanical engineer worked for 49 years before becoming head of the mechanical department of his road. Another worked for 10 years. The average time required for all those of whom the sub-committee obtained complete data was 22.8 years.

Table VI, which shows the number of years that have been required to reach certain railroad executive posi-

tions, cannot be considered as indicative of the actual opportunities afforded members of the profession in reaching the positions shown. Changing conditions in the railroad industry will, in all probability, see more mechanical engineers as railroad presidents. This is perhaps illustrated by the fact that there are now five vice-presidents who are graduates in mechanical engineering. The office of chief purchasing officer is also included in this table because some railroad managements consider technical training to be a necessary requirement for the duties of this position. At the present time two mechanical engineers are serving as chief purchasing officers.

TABLE VI.—YEARS REQUIRED FOR MECHANICAL ENGINEERS TO REACH CERTAIN RAILROAD EXECUTIVE POSITIONS VIA THE MECHANICAL DEPARTMENT

	No. of officers	Longest time	Shortest time	Average
President	1	38	..	38
Vice-president	5	40	11	29.2
Chief purchasing officers	2	35	26	30.5

Table VII shows the maximum, minimum and average salaries paid for certain representative positions or equivalent in the mechanical department in 1921. This information was obtained from a report of hearings before the Committee on Interstate Commerce, United States Senate. Table VIII is shown for purposes of comparison with the salaries paid to engineering graduates in all industries. This information was obtained from a bulletin entitled "Study of Engineering Graduates and Former Students" published by the Society for the Promotion of Engineering Education. In addition to the information relative to salaries, given in Tables VII and VIII, charts on which are plotted curves showing salaries paid by the railroads and salaries paid in other industries since graduation, have also been prepared.

TABLE VII.—MAXIMUM, MINIMUM AND AVERAGE SALARIES PAID FOR CERTAIN REPRESENTATIVE POSITIONS OR EQUIVALENT IN MECHANICAL DEPARTMENT IN 1921

	Maximum salary	Minimum salary	Average salary
Mechanical department heads	$25,000	$4,500	$8,430
Assistant or division S. M. P.	20,200	4,000	6,660
Mechanical engineer	11,320	4,000	5,410
Assistant mechanical engineer	9,600	3,700	4,930
Engineer of tests	10,000	4,000	5,680
Engineer of motive power	8,000	4,000	5,940

TABLE VIII—ANALYSIS OF EARNINGS OF ENGINEERING GRADUATES AS OF JUNE 1, 1924*.

Class	Years since graduation	No. reporting	Annual Earnings: Limit of lowest (25%)	Medium	Limit of highest (25%)	Maximum	Most frequent
1924	0	1,191	1,200	1,476	1,560	4,080	1,200
1923	1	1,218	1,560	1,800	1,980	5,100	1,800
1922	2	1,023	1,800	2,100	2,400	9,000	1,800
1919	5	309	2,400	2,860	3,500	25,000	3,000
1914	10	498	3,110	4,000	5,100	50,000	5,000
1909	15	430	3,600	5,000	3,000	49,500	6,000
1904	20	238	4,000	5,500	10,000	90,000	4,000
1894	30	116	4,500	7,500	15,000	100,000	6,000
Total		5,023	....	....	....	....	....

*See "Study of Engineering Graduates," published by the Society for the Promotion of Engineering Education, page 287.

(The report contained a digest of the replies received from railroads in response to a questionnaire. The more important facts or tendencies brought out by these replies are that the number of college-trained men employed by the railroads is small; that few railroads provide special training for college men, the few exceptional cases having special apprenticeship courses for them; that on some roads promotion of college-trained men is slower than in other fields, and that the roads hiring mechanical engineering graduates have had satisfactory experience in adapting them to railroad service.—Editor.)

Facts Relative to the Railway Supply Industry

A total of 517 manufacturing companies engaged in selling supplies to the railroads wholly or in part are listed in the Pocket List of Railroad Officials. These 517 supply companies employ approximately 7,000 men as executives and sales engineers, a large proportion of which, we have good reason to believe, are men of technical education. There are also 37 private car companies that own and operate over 1,000 cars that should also have need for a limited number of mechnical engineers.

A Study of the Careers of Railway Supply Officers

Table IX showing the careers of officers holding certain representative positions, contains only a few railway supply company officers when compared to Tables III and IV. In collecting data for this table only the careers of railway supply company officers promoted since December, 1919, were considered. An interesting item in this table is the large number of vice-presidents as compared to officers of lower rank. The reason for having 35 vice-presidents and only 12 and 11 general managers or chief engineers is because of the fact that the functions of the latter officers are quite often handled by men holding the title of vice-president. It is not an uncommon thing to have a "vice-president in charge of engineering" in a railway supply company or to see the title of "vice-president and general manager."

TABLE IX—CAREERS OF OFFICERS HOLDING CERTAIN REPRESENTATIVE POSITIONS IN RAILWAY SUPPLY COMPANIES

	No.	No. who started on Ry.	No. who started with Ry. S. Co.	Com-mon school	High school or equal.	College gradu-ates	Per cent college graduates
President	28	6	22	4	6	18	35
Vice-President	35	21	14	10	8	17	48.6
General Manager	12	4	8	2	1	9	75
Chief Engineer	11	4	7	1	1	9	81.8
Manager of Sales	12	7	5	2	3	7	58.3
Railroad Representative	12	9	3	2	1	9	75

Tables IX and X are arranged for comparison with Tables III and IV. It is interesting to note the similarity in respect to time element between the careers of railroad presidents and the presidents of railway supply companies. There is also a large degree of similarity in this respect between the vice-presidents in both industries, but somewhat greater difference in figures appears in the careers of officers of lower rank.

TABLE X—AVERAGE AGES, TIME REQUIRED TO REACH CERTAIN POSITIONS AND TIME GAINED BY COLLEGE GRADUATES IN RAILWAY SUPPLY COMPANIES

	Average Age	Average time in Ry. and Ry. S. S.	Average time for Non-college man	Average time for college graduate	Time (yrs.) gained by college graduate
President	56.6	27.1	35.5	22	13.5
Vice-president	47.75	28.9	32.2	23.8	8.4
General Manager	44.7	29.2	32.4	26	6.4
Chief Engineer	46.25	33.2	41	30	11
Manager of Sales	46	21.75	27.25	18.9	8.35
Railroad Representative	43	27.1	3.8	20.9	17.1

Table XI is arranged for comparison with Table V. Higher officers are included in Table XI, however, owing to the fact that the duties and responsibilities of many railway supply company executives include problems of a mechanical engineering nature. This statement, however, does not apply in all cases, for example the American or Baldwin Locomotive Works, or the American Car & Foundry. But, it can be said that a large share of the problems confronting the president of the average railway supply company are similar to those of the superintendent of motive power of a Class I railroad. He should have sufficient technical knowledge to make intelligent decisions on engineering problems.

(The report here contained a digest of the replies re-

ceived from railway supply companies in reply to a questionnaire covering the same ground as that sent to the railroads. This digest, among others, brings out the following points: Very few railway supply companies have any special course of training for technically-trained men.

TABLE XI—YEARS REQUIRED FOR MECHANICAL ENGINEERS TO REACH CERTAIN REPRESENTATIVE POSITIONS IN A RAILWAY SUPPLY COMPANY

	Longest time	Shortest time	Average
President	45	15	26.8
Vice-President	39	11	25.2
General Manager	45	12	29
Chief Engineer	36	20	26.4
Assistant Engineer	22	15	19
Manager of Sales	40	12	21.2
Assis't or District Mgr. Sales	26	11	19.6
Railroad Representative	43	4	21.2

College men are employed in all branches of supply company operations, including production, engineering and sales. The general opinion expressed is that technically-trained men make better progress than those without such training.—Editor.)

The report is signed by Marion B. Richardson, associate editor, *Railway Age* (chairman); Professor A. J. Wood, The Pennsylvania State College, R. S. McConnell, chief engineer, Baldwin Locomotive Works.

Two Train Control on Southern

WASHINGTON, D. C.

DIVISION 1 of the Interstate Commerce Commission has issued reports approving with one exception the installation of the General Railway Signal Company's intermittent induction type of automatic train-stop on the Charlotte division of the Southern, from Spencer, N. C., to Greenville, S. C., 152.11 miles of double track, under the commission's first order of June, 1922, and also from Greenville to Howell (Atlanta), Ga., 151.91 miles of double track, under the second order, of January, 1924. On the first installation 65 locomotives are equipped and on the second, 39 locomotives.

The exception stated in both reports is that: "The reset contactor must be so located that the brakes cannot be released after an application has been automatically initiated until the train has stopped. This was not the case on all locomotives at the time of the inspection."

The cost of the first installation, as reported by the carrier covering wayside and locomotive equipment is as follows:

ROADWAY EQUIPMENT

Total cost of roadway equipment of train control installation, less power lines and power apparatus, and less cost of signals or cost of change in existing signal system, less salvage	$54,386.92
Total cost of power lines and power apparatus, less salvage	2,225.54
Total cost of changes in existing signal system made necessary by train control, less salvage	1,988.06
Total cost of roadway installation	58,600.52

LOCOMOTIVE EQUIPMENT

Total cost of locomotive equipment installed	94,309.15
Total cost of installation	$152,909.67

The cost of the second installation was reported as follows:

ROADWAY EQUIPMENT

Total cost of roadway equipment of train control installation, less power lines and power apparatus less cost of signals or cost of change in existing signal system, less salvage	$48,102.79
Total cost of power lines and power apparatus, less salvage	1,501.04
Total cost of signal system installed in connection with train control, less salvage	832.08
Total cost of change in existing signal system made necessary by train control, less salvage	707.25
Total cost of Roadway installation	51,143.16

LOCOMOTIVE EQUIPMENT

Total cost locomotive equipment installed	56,585.49
Total cost of installation	$107,728.65

The Southern Railway Company is expected to comply with the following requirements as to maintenance, tests, inspection, etc.

1. Arrangements should promptly be made for careful inspection and test of the train-stop equipment on all locomotives operated in train-stop equipped territory upon arrival at, and before departure from, designated inspection and repair points. This inspection and test should include all parts of the apparatus and all seals should be inspected to see that they are unbroken and that the apparatus is properly cut in service. A daily report as to the condition of the apparatus should be made on a form provided for that purpose, and forwarded by inspectors to a designated officer.

Steps should be taken to insure that the provision for periodic tests of locomotive train-stop equipment are observed.

2. At the time of the inspection there was evidence that the locomotive apparatus was not being adequately maintained. Grounds in the locomotive circuits were not being kept at a minimum, and since certain crosses, or grounds, in these circuits could result in false clear operations, their integrity must be adequately protected at all times. The daily test report should provide for this.

3. A form should be provided for and used by each engineman in reporting failures of the apparatus and any irregularities in the operation of the device. Enginemen should report in detail whenever necessary to cut out the device.

4. In cases of train-stop failures on the road, enginemen should show full information on their work reports in order that the maintenance men at the terminals may promptly locate the trouble.

5. Whistles should be frequently inspected and so maintained as to insure their being readily heard by enginemen and firemen.

6. Locomotive receivers should be checked with an accurate, substantially made gauge, and on level track.

7. In view of the undesired stops reported as due to core sand causing the governor valve of the headlight generator to stick, it is suggested that these failures be followed up with a view to determining just what is involved. It may be that the boiler water used in this territory, which carries considerable mineral matter in suspension, has something to do with the trouble.

8. The automatic brake valves should be so assembled and maintained that all ports will accurately register as intended when the rotary is moved either manually or automatically.

During the locomotive tests and observations, it was noted that this was not the case on all engines, apparently due to lost motion between the actuator driver and the valve spindle, and between the key of the valve spindle and the slot in the rotary valve.

9. Steps should be taken to insure that the indicator pointer and pinion are securely attached to the shaft in all cases, so that the pinion cannot fall into the actuator housing and interfere with manual manipulation of the automatic brake valve.

10. The double-heading cock should be designed and installed so that the train-stop apparatus cannot be cut out of service without also cutting out the air brake system. We have been informed by the carrier's representatives that this has been done since the inspection was finished.

11. As was pointed out in the report on the preliminary inspections of the C. N. O. & T. P. installation under date of March 24, 1925, a cross in the wires leading to the inductor winding, or a cross in the winding itself, would result in a false clear condition of the inductor. It is, therefore, vital that the installation and maintenance of the track inductor circuit shall be such as to protect its integrity.

12. It is suggested that information of interest to train and enginemen with regard to this installation be included in the current operating time tables.

13. The means of securing the inductors to the ties where heavier rail has been laid may prove to be inadequate. If the present fastenings do not hold the inductors securely to the ties, other means should be promptly employed.

14. The roadway installation should be checked with the circuit plans whenever changes are made to insure that the circuits are correct.

15. The type of fouling protection employed at sidings and crossovers should be given careful consideration with a view to possibly providing increased protection. Switch boxes should be carefully maintained. Check should be made to see whether at any point in train-stop territory a car or locomotive can be placed and left between the switches of a cross-over without maximum protection by signal and train control being afforded to main-line traffic.

Eastern Trainmen's Wage Increase

Text of the decision of the first arbitration board under Watson-Parker law, awarding 7½ per cent more to train and yardmen in East—Important rule change demands not granted — Railroad members issue dissenting opinion

THE Board of Arbitration, awarding an increase in wages to the approximately 89,000 trainmen employed on eastern railroads amounting to 7½ per cent, issued its decision in a report late on December 2, as briefly announced in last week's *Railway Age*. This first arbitration board to act under the Watson-Parker law held hearings from October 28 until November 12. After three weeks of considering the testimony that had been offered, the members issued the following decision, with the two railroad members of the board dissenting, which will add approximately $15,000,000 annually to the payroll of the eastern railroads:

The Decision

"The railroads estimate that the requests of the employees would, if granted in full, equal an increase of 19 per cent in their pay, which would amount to 38 millions of dollars per annum.

"All facts, conditions and circumstances relied upon in support of the proposals of the employees were presented and replied to in evidence and in argument. It is not contended that these railroads cannot afford to bear some increase in the wages of these employees.

"After full consideration of all of the conditions and circumstances presented in the record, and of the peculiar, exacting, hazardous and responsible character of the services performed by these employees, the board adjudges and awards as follows:

"The standard rates of pay per mile, per day and per month for conductors, assistant conductors and ticket collectors, train baggagemen, train flagmen and brakemen, in passenger service, for conductors and brakemen in local or way freight service, for conductors and brakemen in through freight service, for yard conductors or foremen, for yard brakemen or helpers and for switch-tenders, shall be increased seven and one-half (7½) per cent over the rates in effect on November 30, 1926.

"In applying the seven and one-half per cent increase the daily rates will be used as bases. Mileage rates will be determined by dividing the new daily rates by 150 and 100 for passenger and freight service, respectively, and monthly rates will be determined by multiplying the new daily rates by 30.

Differentials for Baggagemen and Car Retarder Operators

"Car retarder operators shall be paid 80 cents per day more than the rate herein fixed for yard conductors or foremen.

"Train baggagemen required to handle express shall be paid 34 cents per day more than the rate per day herein fixed for train baggagemen.

"Train baggagemen required to handle United States mail shall be paid 34 cents per day more than the rate per day herein fixed for train baggagemen.

"Train baggagemen required to handle both express and United States mail shall be paid 68 cents per day more than the rate per day herein fixed for train baggagemen.

"Train baggagemen required to handle dynamo shall be paid 34 cents per day more than the rate per day herein fixed for train baggagemen.

"Train baggagemen required to handle dynamo and express or United States mail shall be paid 68 cents per day more than the rate per day herein fixed for train baggagemen. If required to handle dynamo and express and United States mail he shall be paid $1.02 more per day than the rate per day herein fixed for train baggagemen.

"The extra allowance for baggagemen handling United States mail will not apply when the amount of such mail handled does not exceed in volume, between any two points, that provided for the minimum space that can be authorized by the Post Office Department; viz., 3 feet or its equivalent, 54 sacks or pieces. Loading United States mail into car, storing it in car, sorting it en route, or unloading it at intermediate or terminal points will constitute 'handling' under this rule. The extra allowance for handling United States mail will not apply when 'storage' mail is in charge of the baggageman, provided he is not required to 'handle' it.

"The extra allowance for handling dynamo, express and/or United States mail by train baggagemen will apply to other trainmen who may be assigned regularly or temporarily to that work.

"On the adoption of the above award covering rates of pay, Messrs. W. D. Baldwin, Clark, Curtis and Cease voted in the affirmative. Messrs. Massey and W. A. Baldwin voted in the negative."

The Board on Rule Changes

On the proposed rules submitted the board adjudges and awards as follows:

"Rule 1 shall read:

The same increases shall apply to milk, mixed, work, miscellaneous or any service not enumerated as are applied to the service in which they are now classified. Where there is a separate rate for milk, mixed, work, miscellaneous or other service, it shall be increased in the same amount of money compared

with rates in effect on November 30, 1926, as the freight or passenger rate, according to the overtime basis on which it is calculated.

"Rule 2 shall read:

All rates of pay in excess of standard rates, including daily and monthly guarantees, and all mountain, desert or other differentials shall be maintained; that is, the same amount of money now paid in excess of standard rates shall be paid in excess of rates which are herein awarded.

"Rule 3 shall read:

The adoption of the rates herein awarded shall in no case operate to bring about a reduction in rates now paid.

"Rule 4: The request submitted under this head is for enforcement of a rule that is very general in the pay schedules of these railroads. It is not suggested that the language of the rule is ambiguous nor is any change in the wording of the rule sought. The Board is not clothed with police powers to enforce this or any other pay schedule rule.

Rule Governing Local Service

"Rule 5 shall read:

Trainmen in through or irregular freight service required to pick up and/or set off a car or cars at four (4) or more points during any one trip or tour of duty will be paid local freight rates for the entire service performed. Stops made (1) at first point to pick up cars other than cabin or caboose, and at last point to set off cars other than cabin or caboose; (2) at foreign line junction points, not exceeding four in number, when interchange cars only are picked up and/or set off; (3) for setting off defective cars; (4) doubling hills; (5) for setting out cars or picking up cars (but no setting out and picking up at the same point) for the purpose of adjusting the tonnage of the train to established engine ratings, will not be counted as stops under this rule.

Except as provided in (5) a stop covers picking up and/or setting off cars at one point between the time train is stopped and the entire train is coupled up and ready to start.

Trainmen required to load or unload freight or to do station switching will be paid local or way freight rates. Switching necessary in picking up cars will not be considered "station switching." Switching for the purpose of placing at loading or unloading places cars other than cars loaded with live stock or highly perishable freight will be considered "station switching." If, in order to set out car or cars clear of main line, it is necessary to move from "spot" a car or cars that are set for loading or unloading, such car or cars will be replaced on "spot" and so doing will not be considered "station switching."

"Rule 6: This request is denied.

"Rule 7: The rates of pay and the rules embraced in this award shall be made effective as of December 1, 1926.

"On the adoption of the rules above awarded, the vote of the board was unanimous, except that W. A. Baldwin voted no on Rule 2."

Not All Rule Changes Granted as Asked

These rule changes are substantially those asked by the trainmen with the following important exceptions: Rule 5, in which the trainmen sought local rates for even one stop en route to pick up or set out cars; Rule 6, in which the trainmen wished to require at least one brakemen on every passenger train of two or more cars and at least one brakeman on trains of one car when baggage, mail or express matter is handled; and Rule 7 which asked that the effective date of the award be made January 1, 1926. The full text of the trainmen's demands was published in the *Railway Age* of February 6, page 383.

Dissenting Opinion

The dissenting opinion of the two railroad representatives, W. A. Baldwin and R. V. Massey, was made as follows:

"While conceding that the peculiar characteristics of the work of train service employees, as to the elements of responsibility, hazard and away-from-home expense differentiate them from other classes of employees, this situation has been invariably recognized and compensated in previous arbitration awards and adjustments, and we hold that evidence and argument utterly failed to support any claims of unfavorable change of conditions or bring forth new factors that would justify increased rates of pay at this time.

"The employees endeavored to show that as a result of the increasing number of cars in a train, there is additional responsibility of and hazard to the train employees—whereas testimony supported by official records compiled by the Interstate Commerce Commission was presented by the carriers showing that in the eastern territory the average train length has increased by 4.3 cars from 1920 to the end of 1925; that much of this moderate increase has resulted from substitution of more powerful locomotives on those parts of the roads that have the most unfavorable grades; and that the present average trains of such districts are far below the average train handled for many years by the smaller locomotives on the so-called level districts; that such additional responsibility, if any, from added unties to the average train is more than offset by the improved standards of rolling equipment and track design, maintenance and inspection; by automatic block signals and additional main and passing tracks that reduce delays and necessity for train orders; by the use of telephone in substitution for the telegraph; by automatic train control, modern interlocking at railroad crossings and main track connections; and, finally, omitting much more that is equally important and obvious—by the decreased average time to complete a freight run.

Occupational Hazard Decreased

"That these improved facilities have decreased the occupational hazard of employees in train service is evident, and this is clearly set forth in the official statistics of the Commission which show that in the period during which the train length has increased, there has been a marked and consistent decrease in the casualty ratio.

"As to the claim that increased productivity of the individual resulting from longer and heavier trains and increased train speeds warrants additional compensation—it was shown that the carriers of the eastern district have since 1921 expended approximately $928,000,000 for heavier locomotives, improved car equipment, grade reductions, additional main and running tracks, automatic signals and train controls, heavier rails, better ballast, improved interlocking, grade crossing eliminations, fuel and labor-saving devices, improved terminal facilities, all contributing to increased efficiency in operation and service without additional effort or burden to these employees; and that from such savings as have resulted, these employees are now getting a liberal share as compared with the investors.

Roads Earned but 5.13 Per Cent in 1925

"There has been such a remarkable improvement to the plants and in the financial results of these eastern carriers since the return to private operation in 1920, that the public generally, and many of the employees, are misled to the belief that the railroads have been enjoying unprecedented prosperity and are in a position to make liberal concessions in many ways, without jeopardizing their ability to provide efficient transportation service. That this is far from the fact is indicated by the evidence in this case.

"The eastern carriers in 1925 earned 5.13 per cent

on their investment in road and equipment, as compared with 5.74 per cent in 1916. In 1921 but 2.76 per cent was earned.

"The total deficiency in the net railway operating income of these carriers, based on 5¾ per cent, aggregates from 1921 to the end of 1925 the sum of $824,706,347.

"Since 1921, freight rates have been reduced to such a considerable extent that based upon traffic handled by these carriers in the year 1925, there was saved to the shippers the substantial sum of $244,117,679.

"Resulting from the operations of the year 1925 (a year of prosperous business conditions) the eastern carriers were able to pay to the stockholders in dividends but 4.61 per cent, while interest paid on funded debt was 4.71 per cent.

"With the necessity facing the carriers for continuing large expenditures in order to provide safe, efficient and economical transportation, their financial credit must be such as to make investment in their stocks attractive to the public.

"Considering the foregoing pertinent facts, together with the liberal proportion of earnings of the carriers which these classes of employees are now receiving, we cannot concur in the decision of the majority, and, therefore, dissent therefrom."

The New Rates

A table showing the new rates computed by adding 7½ per cent to those in effect previously, together with the schedule of rates, before the increase and the rates demanded follows (exceptions are described in the board's decision:)

Employees yard—	Rates effective in 1924	Rates demanded	New rates computed from board's award
Conductors or foremen	$6.64	$7.64	$7.14
Brakemen or helpers	6.16	7.16	6.62
Road freight—			
Conductors—Through	6.16	7.34	6.62
Conductors—Local	6.68	7.74	7.18
Brakeman and flagmen—Through	4.84	5.84	5.20
Brakemen and flagmen—Local	5.24	6.24	5.63
Road passenger—			
Conductors	6.70	7.75	7.20
Baggagemen	4.86	6.16	5.22
Brakemen and flagmen	4.70	6.00	5.05

A. B. & A. Criticized in Accident Report

WASHINGTON, D. C.

SHARP criticism of the management of the Atlanta, Birmingham & Atlantic is included in the report of W. P. Borland, director of the Bureau of Safety of the Interstate Commerce Commission, on a derailment of a freight train at Deerhurst, Ala., on October 27, which resulted in the death of one employee and the injury of three.

This accident was caused by bad track conditions, the report says, adding that this was the third fatal derailment on the same division within 13 months, "all of the accidents being due more or less directly to track conditions so bad as to be obvious to the most casual observer." "A management responsible for such conditions," the report says, "placing the lives of its employees and the traveling public in continual jeopardy, cannot be too strongly condemned, and it is to be hoped that the conditions disclosed in these three investigations will be remedied in time to prevent the occurrence of other accidents of a similar nature."

Northbound freight extra No. 84, consisting of 27 cars, a caboose and locomotive No. 215, moving at about 25 miles an hour, was derailed a short distance south of Deerhurst station, killing the fireman and injuring three other employees. The engineman said that the train was drifting down a grade of about one per cent, when the engine ran off the rails. The report says:

> Apparently the lack of firmly-spiked, sound ties permitted the rails to spread, allowing the engine wheels to drop between them. Roadmaster Lowery said the track was safe for a speed of 20 or 25 miles an hour, and yet passenger trains are permitted to attain a speed of 40 miles an hour. The speed of trains should be restricted to a safe rate until the track is placed in condition for the operation of trains at higher rates of speed. When attention has once been called to such a matter by the occurrence of a serious accident, it would seem that this ought to be sufficient to cause the situation to be remedied. In the report covering the Parkwood accident, which was due to a combination of defective equipment and track, the following statement was made: "The evidence indicated that there were not enough section men to maintain the track properly, and that about all that could be done with the force available was to make repairs to the worst places and then do the best they could with the rest of the track. * * *." This statement was referred to again in the report covering the Westover accident, which was due entirely to bad track conditions.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended November 27 amounted to 942,792 cars, an increase of 19,586 cars as compared with the corresponding week of last year and of 63,661 cars as compared with 1924. Because of the Thanksgiving day holiday and the usual seasonal decline this was a reduction of 136,020 cars as compared with the preceding week. Decreases as compared with the corresponding week of last year were reported from the Southern and three Western districts and in all classes of commodities except coal and merchandise. Coal loading showed an increase of 55,697 cars, but miscellaneous loading showed a decrease of 18,893 cars and grain and grain products a decrease of 8,471 cars. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

REVENUE FREIGHT CAR LOADING, WEEK ENDING SATURDAY, NOVEMBER 27, 1926

Districts	1926	1925	1924
Eastern	216,340	203,154	200,485
Allegheny	199,838	184,102	174,270
Pocahontas	61,590	56,548	44,858
Southern	146,820	146,881	139,706
Northwestern	102,908	109,447	105,764
Central Western	135,784	142,496	142,366
Southwestern	79,512	80,578	71,682
Total Western Districts	318,204	332,521	319,812
Total All Roads	942,792	923,206	879,131
Commodities			
Grain and Grain Products	40,309	48,780	49,324
Live Stock	29,405	29,660	32,757
Coal	227,936	172,239	172,615
Coke	12,793	14,960	10,633
Forest Products	59,157	65,108	67,156
Ore	14,542	15,536	11,481
Mdse. L. C. L.	233,142	232,522	221,900
Miscellaneous	325,508	344,401	313,265
November 27	942,792	923,206	879,131
November 20	1,078,812	1,057,923	1,010,919
November 13	1,112,886	1,049,940	1,016,843
November 6	1,137,210	1,062,646	995,279
October 30	1,216,432	1,091,154	1,073,374
Cumulative total, 47 weeks	49,529,613	47,523,818	45,059,546

The freight car surplus for the period ended November 23 averaged 115,734 cars, an increase of 17,030 cars as compared with the preceding week. This included 8,722 coal cars, 77,715 box cars, 7,268 stock cars and 4,767 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended November 27 showed a seasonal decline

from the previous week of 643 cars. Compared with the same week last year there was a decrease of 337 cars.

Commodities	Total for Canada Nov. 27, 1926	Nov. 20, 1926	Nov. 28, 1925	Cumulative Totals to Date 1926	1925
Grain and grain products	19,413	20,959	22,071	454,326	434,844
Live Stock	2,933	3,240	3,242	106,563	115,701
Coal	10,037	9,524	9,168	291,108	208,394
Coke	435	536	553	17,848	14,320
Lumber	3,531	3,356	3,392	171,166	168,239
Pulpwood	1,470	1,176	1,650	119,537	115,394
Pulp and Paper	2,080	2,326	2,429	111,624	97,084
Other Forest Products	2,945	2,708	3,119	144,778	132,812
Ore	1,521	1,675	1,400	82,783	67,399
Merchandise, l. c. l.	17,413	17,872	15,866	775,083	723,075
Miscellaneous	14,349	15,398	13,574	680,839	615,498
Total cars loaded	76,127	78,770	76,464	2,955,655	2,692,760
Total cars received from connections	36,442	38,222	33,965	1,756,182	1,569,752

President Coolidge Praises Railroad Service

WASHINGTON, D. C.

"ONE of the large contributing causes to the present highly satisfactory state of our economic condition is the prompt and dependable service, surpassing all previous records, rendered by the railroads," said President Coolidge in his message to Congress on December 7.

The President also recommended, without discussing the subject in detail, that the process of valuing railroad properties should be simplified, that the primary valuations should be completed as rapidly as possible, and that legislation to provide a more effective method for promoting railroad consolidations should be speedily enacted. He has made similar recommendations relating to consolidation in previous messages but, while referring to bills having been introduced on the subject, he made no reference to any particular bill. In his discussion of the agricultural situation the President also referred to railroad consolidation, with a prediction that it would "result in a situation where rates could be made more advantageous for farm produce." The references to transportation in the message, under the heads of "Transportation," "Agriculture" and "Water Resources" are as follows:

Transportation

It would be difficult to conceive of any modern activity which contributes more to the necessities and conveniences of life than transportation. Without it our present agricultural production and practically all of our commerce would be completely prostrated. One of the large contributing causes to the present highly satisfactory state of our economic condition is the prompt and dependable service, surpassing all our previous records, rendered by the railroads. This power has been fostered by the spirit of co-operation between federal and state regulatory commisisons. To render this service more efficient and effective and to promote a more scientific regulation, the process of valuing railroad properties should be simplified and the primary valuations should be completed as rapidly as possible. The problem of rate reduction would be much simplified by a process of railroad consolidations. This principle has already been adopted as federal law. Experience has shown that a more effective method must be provided. Studies have already been made and legislation introduced seeking to promote this end. It would be of great advantage if it could be taken up at once and speedily enacted. The railroad systems of the country and the convenience of all the people are waiting on this important decision.

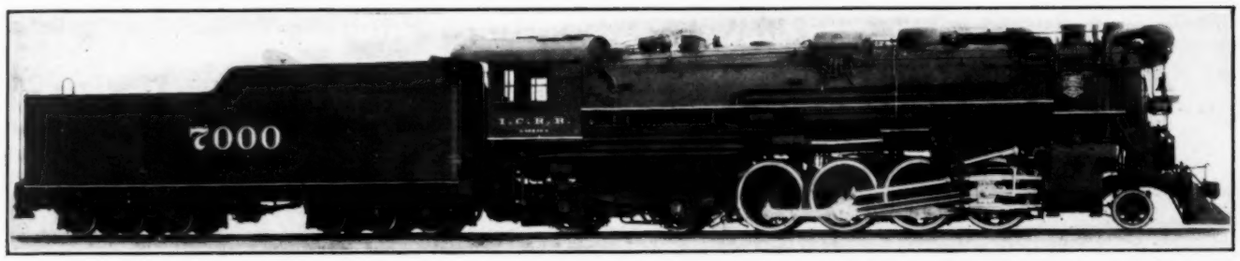
Agriculture

Acting upon my recommendation, the Congress has ordered the Interstate Commerce Commisison to investigate the freight-rate structure, directing that such changes shall be made in freight rates as will promote freedom of movement of agricultural products. Railroad consolidation which I am advocating would also result in a situation where rates could be made more advantageous for farm produce, as has recently been done in the revision of rates on fertilizers in the South. Additional benefit will accrue from the development of our inland waterways. The Mississippi river system carries a commerce of over 50,000,000 tons at a saving of neadly $18,000,000 annually. The Inland Waterways Corporation operates boats on 2,500 miles of navigable streams and through its relation with 165 railroads carries freight into and out of 45 states of the Union. During the past six months it has handled over 1,000,000 bushels of grain monthly and by its lower freight rates has raised the price of such grain to the farmer probably 2½ cents to 3 cents a bushel. The highway system on which the federal government expends about $85,000,000 a year is of vital importance to the rural regions.

The advantages to be derived from a more comprehensive and less expensive system of transportation for agriculture ought to be supplemented by provision for an adequate supply of fertilizer at a lower cost than it is at present obtainable. This advantage we are attempting to secure by the proposed development at Muscle Shoals, and there are promising experiments being made in synthetic chemistry for the production of nitrates.

In previous messages I have referred to the national importance of the proper development of our water resources. The great projects of extension of the Mississippi system, the protection and development of the lower Colorado river, are before Congress, and I have previously commented upon them. I favor the necessary legislation to expedite these projects. Engineering studies are being made for connecting the Great Lakes with the North Atlantic, either through an all-American canal or by way of the St. Lawrence river. These reports will undoubtedly be before the Congress during its present session. It is unnecessary to dwell upon the great importance of such a waterway not only to our mid-continental basin but to the commerce and development of practically the whole nation. Our river and harbor improvement should be continued in accordance with the present policy. Expenditure of this character is compatible with economy; it is in the nature of capital investment. Work should proceed on the basic trunk lines if this work is to be a success. If the country will be content to be moderate and patient and permit improvements to be made where they will do the greatest general good, rather than insisting on expenditures at this time on secondary projects, our internal waterways can be made a success. If proposed legislation results in a gross manifestation of local jealousies and selfishness, this program can not be carried out. Ultimately we can take care of extensions, but our first effort should be confined to the main arteries.

Our inland commerce has been put to great inconvenience and expense by reason of the lowering of the water level of the Great Lakes. This is an international problem on which competent engineers are making reports. Out of their study it is expected that a feasible method will be developed for raising the level to provide relief for our commerce and supply water for drainage. Whenever a practical plan is presented it ought to be speedily adopted.



2-8-4 *Type Locomotive Built by the Lima Locomotive Works, Inc., for the Illinois Central*

2-8-4 Locomotives for the Illinois Central

Similar in design to the A-1 tested on the Boston & Albany— Tractive force with booster 81,400 lb.

FIFTY 2-8-4 type locomotives are being delivered by the Lima Locomotive Works, Inc., to the Illinois Central for use in freight service. These locomotives are similar in design to the A-I which underwent extensive tests the first part of 1925 on the Boston & Albany.* They develop a tractive force of 69,400 lb., at 60 per cent cut-off and 81,400 lb. with the booster. The diameter of the driving wheels is 63 in. the boiler pressure 240 lb. per sq. in. and the diameter and stroke of the cylinders is 28 in. by 30 in. respectively. These figures are the same as those for the A-I with the exception that the A-I develops a tractive force with the booster of 82,600 lb. The new locomotives employ the limited maximum cut-off which, of course, requires an increase in boiler pressure to offset the reduction in the ratio of mean effective pressure to initial pressure resulting from the limited cut-off.

A comparison of the new Illinois Central 2-8-4 locomotives with the A-I is shown in the table of dimensions, weights and proportions. The Illinois Central locomotives have 500 lb. less weight on the engine truck, but the weight on the trailing truck has been increased by 3,700 lb. The total weight of the new locomotives is 388,000 lb., 3,000 lb. heavier than the A-I. The tender of the A-I has a total weight of 275,000 lb. as compared with 286,000 lb. for the Illinois Central, but the fuel capacity of the latter is two tons greater. The boiler design of both locomotives is essentially the same; neither are provided with combustion chambers, and the latter has 88 2¼-in. tubes as compared to 90 for the former. There is comparatively little difference in the amount of heating surface, as shown in the table, and it will be noted that the factor of adhesion is practically the same.

Forty of the 50 Illinois Central locomotives are equipped with Elesco feedwater heaters and the remaining 10 are equipped with Worthington feedwater heaters. The boiler is of the extended wagon top type and is provided with Nicholson thermic syphons, type E superheater and Nathan injectors. The firebox has a length of 150⅛ in. and a width of 96¼ in. with a grate area of 100 sq. ft. The grate bars are of cast steel. All 50 of the locomotives have Dupont Simplex type B stokers, the stoker engine being carried on the tender. Aside from the size of the firebox, the boiler does not differ materially from the usual type of design. Steam is taken from the dome through an outside dry pipe to the superheater header located at the rear of the smokebox. The throttle is a Chambers front end type located in the smokebox just ahead of the smoke stack. Branch pipe connections are provided on either side of the throttle casing from which the branch pipes lead down inside the front end, passing outside at points just above the cylinders.

The cylinders are of cast steel and the cylinder and valve chamber bushings are of Hunt-Spiller gun iron. Connection is made from the valve chamber to the saddle exhaust passage by means of cast pipes which are bolted to openings in the valve chamber extension heads at one end and against the face of the saddle casting at the other. The locomotives are equipped with a Franklin precision reverse gear and steam distribution is effected by a Baker long-travel valve gear.

The locomotives have articulated main and side rods of normalized chrome-vanadium steel, the piston rods also being made of the same material. The driving box brasses are of phosphor-bronze, chill molded, and are lubricated by means of Elvin lubricators. The ash pan is carried on the trailer truck frame. The trailer is of the articulated type and the frame is a one piece steel casting. The engine truck is of the Commonwealth design, equipped with Woodard constant resistance rocker. Both the engine and trailing truck journals are 6½ in. by 12 in. with the exception of the rear trailing truck journal which is 9 in. by 14 in. This axle is driven by the booster.

The air brake and compressor equipment is that of the New York Air Brake Company, schedule LT. The compressors are mounted on the frame ahead of the cylinders, as shown in the illustration. The headlight equipment was furnished by the Pyle National Company. In addition to the special equipment already mentioned, the locomotives are fitted with Moody driving box saddles, Parsons air-operated whistle rigging and combined steam chest and back pressure gages.

The tender has a water capacity of 15,000 gal. and a coal capacity of 20 ton. It is equipped with six-wheel Commonwealth cast steel trucks which have boxes for

* A description of the A-1 was published in the May 2, 1925, issue, page 1077 and a description of the tests on the Boston & Albany appeared in the September 12, 1925, issue of the *Railway Age*, page 467.

6-in. by 11-in. journals. The trucks are provided with clasp brakes. The loaded weight of the tender in working order is 286,000 lb.

COMPARATIVE TABLE OF DIMENSIONS, WEIGHTS AND PROPORTIONS OF THE ILLINOIS CENTRAL 2-8-4 LOCOMOTIVE No. 7000 AND OF THE LIMA A-I

	7000	A-I
Railroad	Illinois Central	.....
Builder	Lima	Lima
Type of locomotive	2-8-4	2-8-4
Service	Freight	Freight
Cylinders, diameter and stroke	28 in. by 30 in.	28 in. by 30 in.
Valves, gear, type	Baker	Baker
Valves, piston type, size	14 in.	14 in.
Maximum travel	8⅝ in.	8¾ in.
Outside lap	2 1/16 in.	2 1/16 in.
Exhaust clearance	1/16 in.	1/16 in.
Lead in full gear	¼ in.	¼ in.
Cut-off in full gear, per cent	60	60
Weights in working order:		
On drivers	248,000 lb.	248,200 lb.
On front truck	35,000 lb.	35,500 lb.
On trailing truck	105,000 lb.	101,300 lb.
Total engine	388,000 lb.	385,000 lb.
Tender	286,000 lb.	275,000 lb.
Wheel bases:		
Driving	16 ft. 6 in.	16 ft. 6 in.
Total engine	41 ft. 8 in.	41 ft. 8 in.
Total engine and tender	82 ft. 5¾ in.	82 ft. 6 in.
Wheels, diameter outside tires:		
Driving	63 in.	63 in.
Front truck	33 in.	33 in.
Trailing truck, front	36 in.	36 in.
Trailing truck, back	45 in.	45 in.
Journals, diameter and length:		
Driving, main	12 in. by 14 in.	12 in. by 14 in.
Driving, others	11 in. by 13 in.	11 in. by 13 in.
Front truck	6½ in. by 12 in.	6½ in. by 12 in.
Trailing truck, front	6½ in. by 12 in.	6½ in. by 12 in.
Trailing truck, back	9 in. by 14 in.	9 in. by 14 in.
Boiler:		
Type	Extended wagon top	Extended wagon top
Steam pressure	240 lb.	240 lb.
Fuel, kind	Soft coal	Soft coal
Diameter, first ring, outside	88 in.	88 in.
Firebox, length and width	150⅛ in. by 96¾ in.	150⅛ in. by 96¾ in.
Combustion chamber, length	None	None
Tubes, number and diameter	88-2¼ in.	90-2¼ in.
Flues, number and diameter	204-3½ in.	204-3½ in.
Length over tube sheets	20 ft.	20 ft.
Grate area	100 sq. ft.	100 sq. ft.
Heating surfaces:		
Firebox and arch tubes	414 sq. ft.	337 sq. ft.
Tubes and flues	4,750 sq. ft.	4,773 sq. ft.
Total evaporative	5,164 sq. ft.	5,110 sq. ft.
Superheating	2,111 sq. ft.	2,111 sq. ft.
Comb. evaporative and superheating	7,275 sq. ft.	7,221 sq. ft.
Tender:		
Style	Rectangular	Rectangular
Water capacity	15,000 gal.	15,000 gal.
Fuel capacity	20 ton	18 ton
General data, estimated:		
Rated tractive force	69,400 lb.	69,400 lb.
Rated tractive force, with booster	81,400 lb.	82,600 lb.
Cylinder horsepower (Cole)	3,400 lb.	3,400 lb.
Maximum curve	.....	19 degree.
Weight proportions:		
Weight on drivers ÷ total weight engine, per cent	63.9	64.2
Weight on drivers ÷ tractive force	3.57	3.58
Total weight engine ÷ comb. heat. surface	53.3	53.3
Boiler proportions:		
Tractive force ÷ comb. heat. surface	9.54	9.61
Tractive force × diam. drivers ÷ comb. heat. surface	601	605
Firebox heat. surface ÷ grate area	4.14	3.37
Firebox heat. surface, per cent of evap. heat. surface	8.02	6.60
Superheat. surface, per cent of evap. heat. surface	40.8	41.4
Comb. heat. surface ÷ grate area	72.75	72.2

THE MISSOURI PACIFIC has granted increases of from 1 to 2½ cents an hour to shopmen, clerks, telegraph operators, agents and maintenance of way employees. The shop employees of the Chicago, Milwaukee & St. Paul have asked that their wages be restored to the level of 1920 when they were receiving 13 cents an hour more than at present. The present rate is 72 cents an hour.

Southern Pacific Train Control Approved

WASHINGTON, D. C.

THE Interstate Commerce Commission, Division 1, has issued a report approving the installation of the automatic train stop system of the National Safety Appliance Company on the Stockton division of the Pacific system of the Southern Pacific, under the commission's second order, as meeting the requirements of its specifications and order. The installation was completed on July 1, 1926, and extends from Tracy, Cal., to Fresno, 125.4 miles, single track, with 75 equipped locomotives.

The cost of this installation as reported by the carrier covering wayside equipment and locomotives, is as follows:

Roadway Equipment:	
Total cost of roadway equipment of train control installation, less power lines and power apparatus and less cost of signals or cost of change in existing signals less salvage	$126,643.00
Total cost of signal system installed in connection with train control less salvage	3,281.00
Total cost of change in existing signals made necessary by train control, less salvage	805.00
Total all other roadway equipment, less salvage	76,134.00
Total cost of roadway, installed	$206,863.00
Locomotive Equipment:	
Total cost of locomotive equipment, installed	46,641.16
Total cost, installed	$253,504.16

The Southern Pacific Company is expected to comply with the following requirements as to inspection, tests, maintenance, etc.:

1. Instructions in effect at the time of the inspection governing tests and cleaning periods for locomotive equipment, checking of seals, etc., should be continued and consistently observed.

2. A review of the performance reports covering the first installation, for the six months' period ended June 30, 1926, shows a large proportion of the undesired stops which occurred as unexplained. Every possible effort should be made to definitely locate the trouble in every case of failure, with a view to removing the cause.

3. Unnecessary bends and right-angle turns in pipe "H" between the release cock and the control valve should be eliminated, as far as practicable, and sweeping bends employed at turns in this pipe to reduce the frictional resistance to a minimum. We are assured by the carrier's representatives that this is already being done.

4. The ball check and needle valve of the forestalling valve, when not properly adjusted, cause improper timing of the forestaller. A ball out of round or a blow past the leather tends to shorten the timing, while dirt or certain improper adjustment of the needle valve tends to lengthen the forestalling time. While the shortening of the forestalling time may result in undesired stops, any excessive lengthening of time may render it unnecessary to acknowledge at succeeding stop magnets. Trouble having been experienced in keeping this valve properly timed, it is important that the inspection shall be such that variation from standard adjustment will be promptly detected and remedied.

5. The clearances in the valve assembly of the duplex control valve are such that freedom from dirt, oil, gum, moisture, etc., must be maintained to prevent false clear failures. Should the duplex control valve strainer or the connection between the stop valve and duplex control valve be stopped up by accumulations of scale, dirt, ice, etc., false clear failures would result. This feature also should continue to receive adequate attention.

6. Careful adjustment of the control valve magnet armatures is essential to a proper operation of the device. Improper adjustment by means of shims may render the armature so sensitive that it will release from the pole pieces too easily, resulting in undesired brake applications, or held too forcibly against the pole pieces, might result in failure to initiate a brake application. This should be carefully watched.

7. Periodical inspection and test to insure that there has been no deterioration of the magnetic qualities of the track magnets should be consistently continued, reports being made on a form provided for that purpose and forwarded by the inspector to a designated officer. Record should be kept of these periodical tests.

8. The circuit plans should be checked with the roadside in-

stallation, whenever changes are made, to insure correctness of circuits. The importance of this is emphasized by the improper connection found at Signal 824 on July 14.

9. The type of fouling protection employed at sidings and crossovers should be given careful consideration, with a view to the possibility of providing increased protection.

Short Lines Hold Annual Meeting

WASHINGTON, D. C.

A TWO-DAY annual meeting of the American Short Line Railroad Association was begun at Washington on December 8. President Bird M. Robinson, in his annual report to the association, outlined the railroad situation during the past year with particular reference to the problems confronting the short lines, and the activities of the officers of the association in representing the interests of the members in connection with proposed legislation and in matters in the courts and before the Interstate Commerce Commission.

Among the subjects included were the railroad labor bill, consolidations, motor busses and trucks, the refunding bill, recapture of excess earnings, the Hoch-Smith resolution, the long-and-short-haul bill, the Mayfield bill to permit railroad extensions without a certificate from the Interstate Commerce Commission, railway mail pay, rules for car-hire settlement, income taxation and the amendment of the constitution of California to reduce the state tax on short lines from 7 to 5¼ per cent. Mr. Robinson said in part:

"The short line railroads have participated fully and contributed substantially to the very great service rendered the public by the steam rail carriers during the year.

"That very great volume of traffic has been handled regardless of the fact that the majority of roads have not received a fair return for the service thus rendered. It is true that some of the carriers have received more than the fair return fixed by law, and by the Interstate Commerce Commission; the fact that some of the carriers have earned more and others less than a fair return for services rendered demonstrates the injustice of the present governmental regulations and limitations. It proves either that it is unfair and unjust to hold rates a low level because higher rates will enable some carriers to receive too much, thereby preventing a very large percentage of the carriers from receiving enough, or that the division of the joint revenue is not equitable.

"Notwithstanding the great, in fact unparalleled, service rendered by the carriers, there was almost a deluge of bills affecting them in almost every way, introduced during the last session of Congress. Of the one hundred and twenty-four such bills only two were enacted, and only one of those were of special importance. That remarkable result was due largely to the effective and successful work of this association and to that of the organization of the main lines.

"Recent developments have emphasized, in a most striking way, that the consolidation of all of the roads into large well-balanced systems is vital, not only to the owners of short lines that render a real public service but even more so to the public which they serve. During the year several applications have been made to the Interstate Commerce Commission asking authority to merge or consolidate certain strong and profitable roads, but none of them included connecting short lines; and some of them have stated frankly that they did not desire and did not intend to include any such lines in their proposed consolidated systems. While the commission was investigating one such application in a public hearing, one of the most outstanding and able railroad executives when testifying in behalf of the applicants for authority to merge three important lines, stated that "there are approximately 30,000 miles of railroad in this country that is a cancerous growth on the transportation system and ought to be scrapped." There are fifty-eight short line roads connecting with, or contiguous to, the three lines desiring to be merged, under the petition then under consideration, but not one of them was included or considered in the proposed plans or desired by the parties making such application.

"This association represents a little more than 30,000 miles of road, and while the executive referred to did not state that only the short lines should be 'scrapped,' his proposal would wipe out the equivalent of all the mileage which this association represents and that plan would, if effected, necessarily include a large number of short lines. While there is not the slightest possibility that Congress, the Interstate Commerce Commission, the public or the owners of short lines will permit the scrapping of any such extensive mileage; yet if the consolidation of the strong lines, such as has been attempted, is permitted, without the inclusion of short and weak roads, the result will be that many of them will be surrendered, their traffic divided and they will soon drift into the 'scrap pile.'

"The Interstate Commerce Commission is so burdened with work, and is necessarily without a full knowledge of all the facts; hence it cannot be expected to be or become the voluntary protector of such roads. The public served by the short lines is not organized for the purpose of protecting its interest in that respect; and it therefore devolves upon the owners of such roads not only to be alert but to do all things necessary to protect and save their roads from destruction.

"The fact that the provisions of the Transportation Act—the first to authorize consolidation—were not altogether workable, and that progress thereunder has been slow, does not indicate that all of the roads that render a real public service will not be consolidated into a few well balanced systems. On the contrary, the study that has been given that problem by all concerned, has convinced the great majority of thinking persons that the welfare of the public, and that of the owners of the carriers, demand the amalgamation of the various roads, in a way and to the extent necessary to preserve for the public its transportation facilities, not only unimpaired, but increased and improved to the extent possible.

"You know, of course, that the Interstate Commerce Commission has not adopted a final plan for the consolidation of all of the roads, as directed by the Transportation Act. That failure was unavoidable, as we believe, because of the inherent difficulties involved in the law; nevertheless it gave rise to a strong demand that the law be amended so as to force consolidations. We have not supported that demand for the reason we believe consolidations are desirable in the interest of both the public and the owner of the roads, and feel that attempted compulsion would retard either rather than advance that end.

"We supported most of the provisions of the Cummins bill, and would be pleased to see it enacted, but the consensus of opinion seems to be that it will be referred back to the committee, and if so, there is a strong probability that many of its provisions will be modified. It is altogether probable that some of its provisions will be eliminated.

"While there has been a slight decrease in the number of members, it has been caused solely as the result of the absorption of some of our members by main lines, which have promptly withdrawn them from further participation; and by the fact that a limited number of members have been placed in the hands of receivers, some of which were withdrawn for that reason. In the meantime, a number of roads have joined, and the net loss is eleven."

Ben B. Cain, vice-president and general counsel of the association, reviewed the work of his department during the year, including a discussion of proposed railroad legislation and cases before the Interstate Commerce Commission. After pointing out the differences between the Cummins and Parker consolidation bills he said the association might well approve the latter unless something better is offered. This was followed by a general discussion of the Mayfield bill in which some members indicated a desire to have the Interstate Commerce Commission pass on questions of railroad extension as a protection of existing roads against new competition because they said local authorities were inclined to approve new railroad projects, while others complained that it too difficult to obtain certificates for extensions from the commission. A resolution was adopted favoring a suggestion made by Mr. Cain that if there appears a likelihood that the House committee will approve the Mayfield bill an amendment be offered to provide that if an extension is proposed that will parallel or invade the territory of a short line that line shall be used as part of the route where practicable.

A dinner was held in the evening at which the speakers were to be Alfred P. Thom, general counsel of the Association of Railway Executives; R. V. Taylor, Interstate Commerce Commissioner, and Senator Key Pittman, of Nevada.

I. C. C. Orders Depreciation Accounting

System to cover 44 classes of railroad property but percentage rates not to be prescribed until later

THE Interstate Commerce Commission, as briefly noted in last week's *Railway Age*, has issued an order requiring railroads and telephone companies to institute as of January 1, 1928, a system of depreciation accounting. The order prescribes the straight line method of depreciation and the system is to cover, in the case of railroads, 44 classes of common carrier property.

Percentage rates are not prescribed but each railroad is required to file by September 1, 1927, estimates of the composite percentage rate for each primary account and after a check of this and other data rates will be prescribed for each carrier by temporary order.

The classes of property for which depreciation accounting is required by the order are as follows:

Road:
- Underground power tubes.
- Tunnels and subways.
- Bridges, trestles and culverts.
- Elevated structures.
- Ties.
- Rails.
- Other track material.
- Ballast.
- Right-of-way fences.
- Snow and sand fences and snow-sheds.
- Crossings and signs.
- Station and office buildings.
- Roadway buildings.
- Water stations.
- Fuel stations.
- Shops and engine houses.
- Grain elevators.
- Storage warehouses.
- Wharves and docks.
- Coal and ore wharves.
- Gas producing plants.
- Telegraph and telephone lines.
- Signals and interlockers.
- Power dams, canals and pipe lines.
- Power plant buildings.
- Power substation buildings.
- Power transmission systems.
- Power distribution systems.
- Power line poles and fixtures.
- Underground conduits.
- Miscellaneous structures.
- Paving.
- Roadway machines.
- Shop machinery.
- Power plant machinery.
- Power substation apparatus.

Equipment:
- Steam locomotives:
- Other locomotives.
- Freight-train cars.
- Passenger-train cars.
- Motor equipment of cars.
- Floating equipment.
- Work equipment.
- Miscellaneous equipment.

Summary of Commission's Findings

1. Proceedings instituted under paragraph (5) of section 20 of the Interstate Commerce Act, as amended February 28, 1920, which requires the commission, as soon as practicable, to prescribe, for carriers subject to the Act, the classes of property for which depreciation charges may properly be included under operating expenses, and the percentages of depreciation which shall be charged with respect to each of such classes of property, classifying the carriers as it may deem proper for this purpose.

2. With the exception of land and grading, most property units which make up the plant of a railroad or telephone company are gradually worn out in operation or are abandoned from time to time in favor of better substitutes.

3. The cost of property thus consumed or abandoned is plainly a part of the cost of rendering service, and the accounts should conform to and adequately record this fact.

4. The contention that the retirements of most units of a large composite railroad or telephone property tend to equalize, i. e., become the same in amount from year to year, is not adequately supported by data of record. The evidence indicates that the opposition to depreciation accounting is based partly on a desire to adjust retirement charges from year to year in accordance with financial needs.

5. The cost of rendering service involved in the consumption or abandonment of depreciable units of property is not adequately recorded when no account is taken of this cost prior to the time of retirement of such units. An adequate record requires proportionate, periodical charges, i. e., depreciation charges, throughout the service lives of the units.

6. The depreciation reserve is a record of the undoubted fact that the service lives of existing depreciable property units have, to a certain extent, been consumed.

7. Depreciation accounting is a necessary measure of self-protection to the carriers, in view of the decisions of the Supreme Court of the United States to the effect that accrued depreciation must be deducted in determining the rate base.

8. All things considered, depreciation accounting, in the long run, is less burdensome than retirement accounting to patrons and investors. It conforms to the principles of conservative and constructive finance.

9. Future service lives can be estimated with sufficient accuracy, subject to public supervision and to modification and correction from time to time, to meet the needs of depreciation accounting.

10. No good purpose is served, so far as depreciation accounting is concerned, by attempting to distinguish between present and future patrons and their interests. The purpose of depreciation accounting is to charge the cost of current consumption of property in service against the current users of the property. But the method of spreading such cost over a period subsequent to the retirement of the property is available for use in emergencies.

11. The need for depreciation accounting is emphasized by the provisions of Section 15a of the Interstate Commerce Act relative to the recapture by the Government of excess income and by the existing situation with respect to the public regulation of both steam railroad and telephone companies.

12. Depreciation accounting is supported by prior decisions of the commission in valuation proceedings, by decisions of the United States Supreme Court, and by the decisions of other courts and of Federal and State commissions. It is also in general accord with the provisions which, at the present time, are embodied in the accounting classifications of steam railroad companies and telephone companies, and which were included in those classifications when Section 20 of the Act was amended.

13. The provisions of paragraph (5) of Section 20 of the Act specifically empower the commission to require and prescribe the amount of depreciation charges. The general power to prescribe a uniform system of accounts also implies and includes power to require accounting for depreciation.

14. Telephone property, although used largely for local business, is subject to Federal regulation when it is subject to interstate use.

15. Depreciation accounting for telephone companies, Classes A, B, and C, is practicable, but the determination of depreciation percentages for the various classes of telephone property is a task as to which the commission may well avail itself of the cooperation, services, records, and facilities of State commissions, under the provisions of paragraph (3) of Section 13 of the Interstate Commerce Act.

16. Depreciation is the loss in service value not restored by current maintenance other than extraordinary repairs and incurred in connection with the consumption or prospective retirement of property in the course of service from causes against which the carrier is not protected by insurance, which are known to be in current operation, and whose effect can be forecast with a reasonable approach to accuracy.

17. Depreciation expense is based upon the original cost of the property in question to the accounting company, and depreciation accounting requires an analysis of the investment and apportionment of appropriate amounts to the primary accounts covering depreciable property, under road and equipment for steam railroads and under fixed capital for telephone companies. The accounts of the steam railroad companies, in general, now furnish no adequate record of property costs, but the deficiency may be supplied, with sufficient accuracy for the purposes of depreciation accounting, by appropriate use of the inventories of our Bureau of Valuation. Rules prescribed accordingly for the distribution of the investment account of steam railroads. It appears that the investment accounts of telephone companies are, in general, sufficiently adapted to such accounting; but if it should develop that they are not so adapted, this matter can then be dealt with.

18. The total expense of depreciation in connection with any unit of property is its service value determined by taking into consideration ledger value, net salvage value, and extraordinary repairs, as these terms are defined in the report. The cost of removing property or recovering salvage at time of retirement should be deducted in determining net salvage value. The retire-

ment of continuous structures, such as fences, snowsheds, etc., and of certain other units of property, such as equipment, is postponed either materially or indefinitely by the application of piecemeal renewals or rebuilding programs, both of which are termed in the report "extraordinary repairs." It is essential to a properly comprehensive system of depreciation accounting that provision be made in the reserve for such extraordinary repairs.

19. Property once acquired should remain in the plant account at its cost until it is finally abandoned or is put to a new use different from that for which it was originally installed.

20. The sinking-fund and straight-line methods of accounting for depreciation compared, and, for reasons stated, the latter approved.

21. The various classes of telephone and steam railroad property considered and their depreciable nature discussed. Classes of property found subject to depreciation specified.

22. The unit and group plans of accounting for depreciation compared, and the latter approved. Groups of property and reserves applicable thereto should correspond with the primary accounts in road and equipment of steam railroads and of fixed capital of telephone companies, including improvements on leased railway property. Operating companies must also account for depreciation charges on leased property.

23. Impossible to prescribe uniform depreciation percentages for the various classes of depreciable property, applicable to all companies alike. Method of determining depreciation percentages for individual companies prescribed, co-operation with the State commissions in the supervision of this matter being provided for in the case of telephone companies. Both classes of companies required to keep adequate property records and maintain, in convenient and accessible form, engineering data bearing upon prospective service lives.

24. Some classes of property are of such a character that it is not practicable to keep individual unit costs. In determining the debits and credits to the various accounts under depreciation accounting, amounts for specific units to be used so far as practicable; but, where that is impracticable, average amounts to be used.

25. While certain causes of the retirement of property are not factors to be included in the estimate of depreciation charges, all losses at time of retirement required to be charged to the depreciation reserve, with provisions for compensating adjustments where necessary.

26. The amount of accrued depreciation not previously accounted for by steam railroads, as of the date depreciation accounting for fixed property becomes effective, required to be computed and shown in the accounts in accordance with a prescribed method of adjustment.

27. The cost of extraordinary repairs when made and the service value of property when retired required to be charged to the appropriate primary accounts under maintenance expenses and concurrently corresponding amounts released from the depreciation reserve to special credit accounts provided for that purpose under maintenance expenses.

28. Each carrier required to include in its annual reports to the commission a sworn statement showing, by primary accounts, the extent to which ordinary maintenance has been neglected or deferred.

29. Depreciation accounting, as prescribed in the report, ordered to become effective January 1, 1928.

Extracts from the Report

Some extracts from Chairman Eastman's report and a separate concurring opinion by Commissioner Woodlock are as follows:

To carry out these provisions we organized a depreciation section in our Bureau of Accounts with instructions to make a preliminary investigation, with respect to each class of carriers, and report its tentative conclusions and recommendations. In pursuing its inquiry the depreciation section sought the co-operation of the carriers, of the state commissions, and of all others interested in the subject. Each carrier of every class was called upon to submit information based upon its past experience, as well as its views with respect to classes of depreciable property and percentages of depreciation. A committee was also appointed by the National Association of Railway and Utilities Commissioners. In the case of the steam railroads, a committee for purposes of co-operation was selected by the Railway Accounting Officers' Association in conjunction with the Presidents' Conference Committee on Valuation, the American Short Line Railroad Association being also represented.

As a result of its preliminary investigations, the depreciation section issued a tentative report in No. 14700 upon the depreciation charges of telephone companies on March 10, 1923, and a similar tentative report in No. 15100 upon the depreciation charges of steam railroad companies on August 23, 1923. These tentative reports were widely distributed, and in both cases were used as the basis for public hearings at which all interested parties were given opportunity to submit evidence. Following these hearings, the two proceedings were jointly assigned for argument before the entire commission.

The hearings developed a wide and striking difference of opinion upon a basic question partly of fact and partly of theory. This question is of such controlling importance that we shall discuss it at the outset. It must be determined before the numerous questions of law to which the proceedings have given rise can profitably be discussed. Representative of the opposing views are the position of the telephone companies, on the one hand, and the position of the railroad, gas, and electric light companies, on the other hand.

If properly maintained, the railroads say, the composite property does not depreciate or lessen in value or service ability. In fact it may be worth more to a prospective purchaser when seasoned by long-continued operation than when new. No reserve is needed to protect the integrity of the investment, but the creation of such a reserve may be desirable to spread the cost of retiring certain large units of property and prevent a disproportionate burden upon the operating expenses of any one year. In the case of a large, composite property which has "struck its gait," it is claimed that retirements of most property units are about the same in amount from year to year, so that there is no need for such an equalizing reserve. In the case of the larger units, there may be such need, but the reserve should be called a "retirement" rather than a "depreciation" reserve. Its amount is not a matter of mathematical computation from theoretical service lives, but rather a matter of judgment. Where property is unexpectedly retired, not because it has been worn out, but because some more efficient substitute has been developed, the cost of retirement should be spread, not over the past, but over the future, so that the burden may fall upon those who gain the benefit from the enhanced efficiency. The ascertainment of service lives, upon which what the gas and electric companies call "theoretical depreciation charges" are dependent, is, they say, a wholly impracticable undertaking requiring a knowledge of the future which no one has. It is contended that the making of such depreciation charges merely results in the accumulation of a huge reserve which will in time fluctuate around 50 per cent of the recorded investment; that such a reserve serves no useful purpose; and that it is a burden both upon the patrons of the company and upon the investors in its securities. If it were to be assumed that the composite property would at a certain time come to the end of its life, there might be need for such a reserve, but in most cases such properties may for all practical purposes, it is asserted, be regarded as perpetual.

The question raised by this divergence of opinion merits the most careful consideration. There is general agreement that, with the exception of land and grading, most of the property units which make up the plant of a railroad or telephone company are gradually worn out in operation or are abandoned from time to time in favor of better substitutes. There also can be no doubt that the cost of such worn-out or abandoned property units is a part of operating expense to be charged against the service. The basic question is whether such cost should be charged in bulk at the time when each unit is retired, or should be anticipated by periodical installments spread over its service life.

While the steam railroad, gas, and electric companies insist that the retirements of most units of a large, composite property tend ultimately to equalize, that is, to become the same in amount from year to year, no data were presented which furnish adequate support for this contention, nor is it confirmed by our own records. Furthermore, one of the chief reasons why these companies object to depreciation accounting is apparently a desire to avoid such equalization of retirement expenses. They wish an opportunity when business is poor to postpone or defer retirements, and consequent charges to operating expense, until business is good. Unless this opportunity be afforded, they say that at times their credit may suffer seriously, either because of a suspension or diminution of dividends or because of an unfavorable showing of net income. This amounts to saying that they wish to use the expense of maintaining the property as a form of shock absorber, allowing this expense to fluctuate in harmony with relative prosperity.

Substitutes for Depreciation Charges

While the steam railroads oppose the making of depreciation charges and the creation of depreciation reserves, they have in the past quite generally adopted and defended practices which, when analyzed, are shown to have in many respects much the same practical effect. Thus, prior to our uniform system of accounts, it was the practice of many of the steam railroads to charge to operating expense, not only the cost of repairs and retirements, but also the cost of additions and betterments in substantial amounts. That this was the practice can easily be shown by our own records; but that is unnecessary, for its existence may be established by reference to certain decisions of

the Supreme Court of the United States. After the establishment of the uniform system of accounts, which prohibits the charging of additions and betterments to operating expense, the railroads have consistently urged that they are entitled to earnings sufficient, not only to pay reasonable dividends, but also to permit the accumulation of a substantial surplus which may be invested in additions and betterments.

The Present Need for Depreciation Accounting

The interstate commerce act now provides, in section 15a, a rule for regulating the general level of railroad rates. They are to be adjusted so that the railroads will earn, by groups, or in the country as a whole, a certain definite return upon the aggregate fair value of their properties. Provision is made for the recapture by the government of part of the earnings of companies which are fortunate enough to earn more than 6 per cent upon such value. In order that these provisions of the law may be successfully administered, it is necessary to have an accounting system which will disclose as accurately as possible the actual cost of operation. This is necessary for the protection both of investors and of the public. If more be included in operating expense than ought to be there, the public will suffer. If less be included, investors will suffer. This brings depreciation expense to the forefront. If the railroad, gas, and electric companies are correct in their contentions, then the present large amounts which are being charged each year for the depreciation of equipment and to some extent of fixed property ought to be eliminated from operating expense. And by the same reasoning the depreciation reserves for equipment which have been built up, amounting all told to more than one billion dollars, ought to be made a part of accumulated surplus available for declaration of dividends. On the other hand, if the telephone companies are correct in their contentions, then regular amounts should be included annually in operating expense, not only for depreciation of equipment, but also for depreciation of many other kinds of steam railroad property for which such charges are not now accrued. And by the same reasoning the large amounts for the retirement of property which are included in operating expense in prosperous years and the lesser amounts which are included in years of depression should be eliminated and charged to the depreciation reserve. Moreover, if depreciation accounting be correct in principle, then the public regulating authority must be on its guard to prevent these charges from being made either smaller or larger than they ought reasonably to be made. Obviously a need for exact accounting in this respect exists which has not heretofore existed, and this no doubt was recognized by Congress in the amendment to section 20 under which this proceeding was instituted.

Quite apart from this special need to which section 15a has given rise, there is a general need for accurate accounting as to operating costs which perhaps did not exist in the past or at least not to the same extent. In the early days of railroad construction and for many years thereafter, railroads were dealt with very much as other private industries, and they offered a field for large speculative profits. That day has gone by and railroads are now confined, restricted, and supervised in almost every phase of their activities by public regulation. This regulation has eliminated much of the former risk of investment, but it has also eliminated much of the opportunity for large speculative profits. To attract investment under such circumstances the element of risk must be held within the closest possible limits, and this means careful provision against the uncertainties of the future. It also means a system of accounting which will disclose as nearly as possible the actual cost of operation which is presently being incurred, and which will reduce to a minimum the possibility of misleading investors by postponing to a later date the disclosure of any part of this cost. Nor does the need for such accounting exist only in the case of investors. The public served has an equal interest. In the old days of possible speculative profits the sequence of receiverships, reorganizations, and recoveries which so frequently occurred involved some temporary disturbance and impairment of service, but no lasting injury, since new capital could be drawn without much difficulty into the field which disaster had visited. It is doubtful whether disaster can be so easily repaired under present conditions. If the public is now to secure necessary extensions of service and to be in a position to reap the benefit of improvements in the art of railroading as they develop, reliance must be placed upon sound economy rather than upon speculation and chance.

In our opinion depreciation accounting satisfies the needs above set forth. The essential reason is that this method of accounting conforms with far greater accuracy than the retirement method to the actual facts with respect to operating costs. Neither investors nor the public are left in doubt in regard to the costs which are currently being incurred and ought currently to be met in the interest of prudent and sound economy. If these costs be met, the financial condition of the companies will be strengthened and they will be able to face the future with a greater degree of assurance. There will be no need for mortgaging the future to meet the debts of the past. Investors and the public generally will be protected against extreme fluctuations in operating expense and against an unnecessarily large volume of outstanding securities demanding interest or dividend payments. Depreciation accounting, in short, conforms to the principles of conservative and constructive finance.

In Conclusion

The criticism most commonly urged against depreciation accounting and the plea most commonly offered for the retirement method is that the former is purely speculative while the latter rests upon a solid foundation of fact. Both arguments are fallacious. Depreciation accounting is speculative only in that it applies to the future conclusions drawn partly from past experience and partly from thorough knowledge of existing facts; the retirement method is, no doubt, founded on fact, but it neglects to take into account all the facts. Strict logic would require that the advocates of the retirement method should neglect to take into account accrued interest, accrued rentals, accrued taxes and audited vouchers, until such interest, taxes and vouchers should have been actually paid. True, these and similar items can in general be estimated with greater mathematical accuracy, but it does not follow from this fact that depreciation charges cannot be calculated with a sufficient degree of accuracy to achieve their purpose.

With retirement accounting the books furnish a record which may be a wholly untrustworthy reflection of the facts. This has been demonstrated by experience time and again. By postponing needed retirements a company may make a showing of earnings which is designed to mislead investors and which will accomplish that result in the absence of an inquiry extending beyond the face of the accounts. On the other hand, by concentrating or accelerating retirements a company may, at least for a time, conceal prosperity which it does not wish to disclose. Even if there be no intent to mislead or deceive, the irregularity in retirements which is often inevitable may, and frequently does, produce that result. The facts in regard to the constantly accruing consumption of capital in service are not recorded; the record is in all cases deferred until the consumption is complete.

Depreciation accounting with all its difficulties is, we are persuaded, a method which will produce a much more nearly accurate reflection of the facts than will retirement accounting. While we do not minimize the difficulties and possible dangers, we are confident that in the course of actual practice and experience they will continually decrease in importance. In the early days of every form of public supervision of private enterprise the difficulties to be encountered create alarm by their apparent multitude and magnitude. In actual practice they gradually lose their formidable character as principles are developed and precedents set. So it will be with depreciation accounting.

Owing to the radical change in present methods of accounting which are involved in the case of steam railroad companies, the orders hereinafter entered are made effective on January 1, 1928, in order that there may be an adequate period of preparation.

Commissioner Woodlock in Concurring Opinion

WOODLOCK, *Commissioner*, concurring:

I am in accord with the main principle expressed in this report. Most of the confusion of thought expressed in past discussion of the subject of depreciation in general and the necessity for depreciation accounting and depreciation reserves grows out of the failure to recognize the vital connection of the subject with the subject of valuation. If, as seems certain, "present value" for rate-making purposes is to base largely upon reproduction cost, depreciation accounting by the straight-line method is absolutely necessary for preservation of the rights of carrier property owners. If original cost in any of its forms were to be the norm of value, then a fairly good case might be made by large and long-established carriers against the necessity for depreciation accounting at all, even by the sinking-fund method, because under the original-cost method of valuation no deduction from original cost for accrued depreciation as distinguished from functional depreciation resulting from under-maintenance, is required. There is, however, no present necessity to berate for loose logic contestants on either side of the argument as it has been conducted up to this time, for there is no essential dispute concerning the fundamental fact. Depreciation accrues in all properties, composite or otherwise, is in some form a necessary charge upon the rates for service, should be so charged if accounts are properly to represent the facts, and, if properly assessed and charged, is neither undue burden nor undue benefit to anyone. The courts having definitely committed themselves to the reproduction-cost method of ascertaining present value, straight-line depreciation accounting and depreciation reserves become a necessity. To that extent I agree with the report.

I do not agree with the view that the arguments against a general depreciation reserve, applicable to the entire property of a carrier, are "convincing" so far as the future is concerned. They

are, no doubt, strong as applied to present practice in present conditions, but if a composite percentage can safely be applied to a group of property units, I fail to see why the same principle is not ultimately possible of application to a property as a whole, provided that that property continues reasonably stable as regards its composition. Time and experience will, however, be required to lay the foundation for application of general percentages; for the present it is perhaps sufficient to apply the group basis where it may prove to be convenient. The report, furthermore, fails to include in the items which it lists as depreciable property certain items which in the ascertainment of reproduction cost less depreciation are subjected to depreciation. I see no logic or justice in this. If we are to have depreciation accounting, account should be taken of every item depreciable in valuation, and depreciation reserves should be created for all such items. If this be not done an undue burden will be imposed upon property owners. That the items omitted are not many and not large is no reason for their omission—rather it is the reverse. Furthermore, I see no reason for requiring carriers to subdivide investment accounts upon their books in the manner prescribed by the report. It may be that our valuation inventories at 1914 prices do correspond fairly well to actual construction costs over a substantial period of years prior to 1914. The evidence supporting this statement, however, is not of record, and even if it were true it would still be unnecessary to require the carriers now to place upon their books figures reached in this way in lieu of their present investment accounts. These figures can easily be made the basis for setting up depreciation reserves (where such basis is not offered by the books) without placing them actually on the books. That is all that is necessary to enable the proper accounting to be made. It will be time enough to require a restatement of investment accounts upon carrier books when, as, and if, a really final determination of "present value" shall have been made.

Little Railroad Legislation Expected

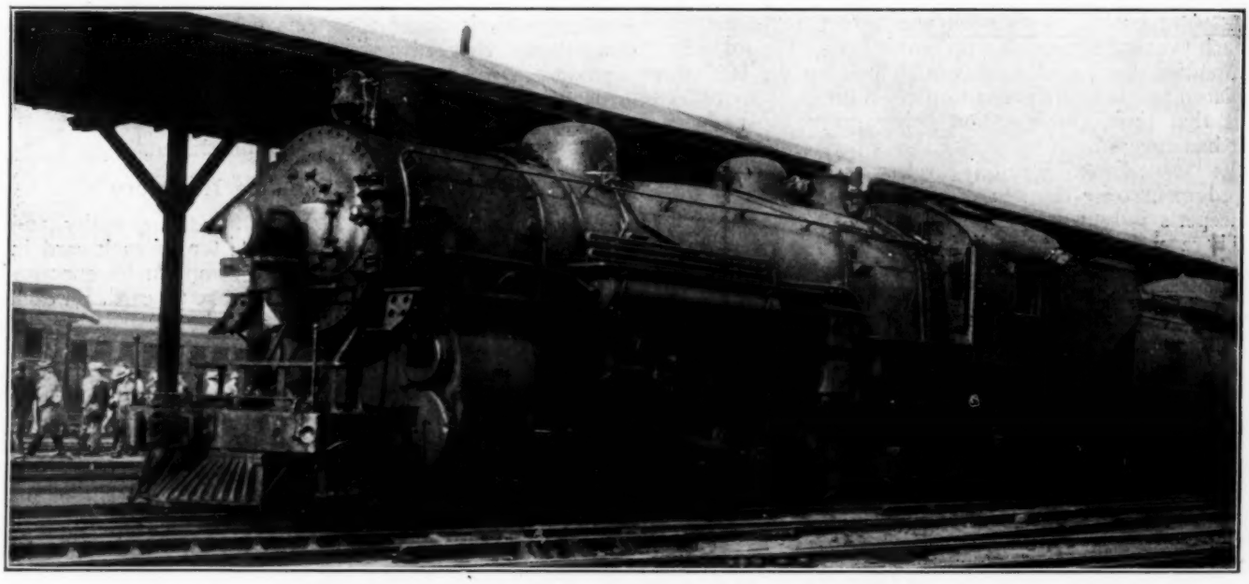
WASHINGTON, D. C.

THE final or "short session" of the Sixty-ninth Congress, which expires on March 4, began on December 6, but although several railroad bills of considerable importance are pending as the result of the activities of the last session, the general prediction is that there will be very little activity relating to them at this session. Very little legislation aside from the appropriation bills is usually expected from a short session and this time there are so many controversial subjects to be talked about and the railroad legislation pending is of a kind which has attracted comparatively so little general attention of late, that the prediction this time is made with more than usual confidence.

Probably the most important pending bill is the Parker railway consolidation bill, on which hearings have been held by the House committee on interstate and foreign commerce. It is believed that this may be reported or possibly even passed by the House, but, as the Senate committee has struggled with the subject through one series of hearings and has reported the very different Cummins bill, such speedy consideration as would make possible an agreement between the two houses is not looked for, in spite of the fact that President Coolidge has recommended that some such bill be speedily enacted.

There are pending on the Senate calendar the Robinson bill to abolish the Pullman surcharge, the Gooding bill to provide for a refunding of railroad indebtedness at a lower rate of interest, and the Smith bill providing for a reorganization of the Interstate Commerce Commission on a regional basis. These bills, having been favorably reported by the committee on interstate commerce, are in a situation where they might be passed, but they would still have to pass the gauntlet of the House. Three bills that were passed by the Senate are still pending before the House committee on interstate and foreign commerce: the Mayfield bill to permit extensions of railroads to be built without approval by the Interstate Commerce Commission, a bill to authorize reduced railroad rates in time of emergency, and a steel car bill. The House has also passed the omnibus Newton bill, providing for the amendment of several sections of the interstate commerce act, which is pending before the Senate committee.

Senator Gooding has introduced a bill, S.4601, to repeal section 15a of the Transportation Act, and Representative Jones of Texas a bill H.R. 13,493, to provide that a certificate from the Interstate Commerce Commission shall not be required for an extension within a state that has been approved by state authorities.



Erie Locomotive No. 2752 in Suburban Service at Jersey City

Railway Storekeeping---Past and Present

*Changes in Canadian National methods reflect progress in hitherto neglected field—Stocks cut in half—turnover doubled**

By L. C. Thomson
Manager of Stores, Canadian National, Montreal, Que.

I JOINED the supply forces of one of the largest railways in the country in 1897, and I often now look back and wonder how we ever justified our existence. We always seemed to be short of the article required, rushing through orders to the purchasing department, and forcing it to buy on short notice at the expense of higher prices, in order that the demands on us might be met and the work not impaired. The situation got so acute that a purchasing representative was finally assigned to the stores office to look after emergency purchases and trace shipments. Baggage shipments outward were very heavy, and, finally we were assigned a baggage car for long haul shipments. It would be impossible to estimate accurately what this all cost and yet this was not a condition common to that road alone, but I believe was the situation on railroads generally.

Early Methods Primitive and Costly

These shortcomings in years past were due to the fact that the management did not take the department seriously. It was not properly organized, and proper detail methods had not been worked out. Out in the storehouses, we were given so many requisitions to fill and it was our business to go to the shelves and pick out the material to fill each requisition, then issue it over the counter to men from the shops, or turn it over to the shipper with the order, where it was checked, packed, and forwarded by freight or baggage. The method of keeping up stock was primitive. When issuers saw the material getting low on the shelves they made a note in a "want book." This book was turned in to the office each evening for making up requisitions. On some commodities, the storekeeper would look up the last order placed and base his present order on the quantity ordered at that time, consideration being given to the period it had covered. If by chance the issuers omitted to mark the "want book," through carelessness, or through poor judgment over the adequacy of stock, or if the storekeeper's judgment was poor, a shortage was the result. There was then turmoil in meeting the emergencies, which also increased correspondence, telegrams, and office work generally.

This has all been changed. The Canadian National comprises approximately 22,000 miles of road, 3,000 locomotives, 3,500 passenger cars, 123,000 freight cars, and 9,000 miscellaneous cars and employs 110,500 employees. Our district stores carry from $800,000 to $1,400,000 worth of material, including from 30,000 to 38,000 items. Under present practice these items were divided into 50 classes of material and the 50 classes are under the jurisdiction of stockkeepers who report to the storekeeper. Each stockkeeper controls approximately eight classes of material, and is assisted by three or four helpers as the volume of business demands. A bin tag 5½ in. by 3 in. is made for each item of stock, showing the full description of the article, its classification, the blue print, specification, or catalog reference, the pattern number and the class of equipment for which it is required, and columns are provided for showing the date, quantity on hand at the first of the month, the quantity ordered, received and issued, and the price of the article. This card, which is kept in a holder on upper left side of the bin, shows the daily activity of the item.

Stock Cards Facilitate Operations

At the end of each month these are balanced by the stockkeeper and one of his assistants and the totals transferred to stock cards, which are kept on trays in the stockkeeper's portable desks. A card is a four-year record. When the stockman finds his balance close to his minimum stock, he puts in a green signal tab, and marks on the card the quantity to order. If the stock is inactive or a surplus, he attaches a red signal. The trays or panels carrying these cards are immediately turned over to requisition clerks who make requisitions covering the items marked with green signals, mark the cards with the numbers of the order on the purchasing department and the date, and return the panels to the stockman, who checks the items ordered, and removes the signal. As soon as possible the stockkeeper makes up a list of the red signal items, which is turned over to the storekeeper, who in turn sends it along to the general store where a clerk places the items on surplus stock cards, which are checked against all requisitions for material passing through the office. This system has been the means whereby thousands of dollars' worth of material has been transferred to points where it could be used, which otherwise would have been purchased.

Ten Days for Complete Inventory

At annual inventory, October 31, the quantity and price are shown to the right at the top of each card in the panel which is then passed to a comptometer operator to be extended and totalled. There are 65 cards on each side of a panel. These panels are photostated three at a time and the prints cut and bound together to form the inventory list. At one point, with $1,400,560 stock and approximately 40,000 items, inventory was completed in 10 days by this method, which eliminates calling, typing and checking and the possibility of errors, also much labor and overtime and the usual interruption to current work. In years past, inventory work took us months looking up prices, typing and calling, all of which has been made unnecessary by modern and more efficient methods.

Baggage shipments are now comparatively few, re-

* From an address presented before the Engineering Institute of Canada, Montreal Branch, December 2.

quisitions from agents and the maintenance of way department, etc., now reach the stores on schedule after being approved by superintendents. The commodities are summarized and loaded into supply cars, which are operated in mixed and freight trains on schedule each month, in charge of stores employees. There are 14 of these cars fitted with living quarters, measuring oil tanks, and with shelving and racks. These cars cover an average of 3,000 miles each per month, or a total of 42,000 miles, and are out about 26 days. In years past, oil was shipped to the smaller points in cans. Many complaints were received. Glassware, consisting of globes and chimneys, was often broken. Material often went astray. The supply car operation has eliminated this and also all packing, tagging, way billing, shipping advices, and mailing.

Previously little or no thought was given to department meetings, where one department could learn about the work being undertaken by the other, and so that the stores could learn what material was likely to be required. Today the operating officers hold such meetings periodically, at which all departments are represented. In addition, the general storekeepers have conferences every six months, and the stores department as a whole has an annual meeting where the policies and practices of the department are fully discussed. These meetings have proved important factors in improving the service and effecting economies.

Large Benefits from Stores Delivery

At most of the important shops on the Canadian National, stores delivery has been inaugurated. An example will illustrate what has been accomplished. At one point there are 3,600 to 3,800 employees, and before installing stores delivery an average of 315 shop men came to the stores daily for material. The average rate of pay at this particular shop was 66 cents per hour. Allowing 16 minutes per man, this practice cost the railroad approximately $56 per day, or $15,000 per year. In addition, eight or ten teams were working at this particular shop all the time. A check made a few weeks ago at this same shop showed that there was an average of three men per day coming to the stores for material. Investigation showed that these men came for technical or special material which could not be handled by messenger. Under the old method it cost about 6¾ cents per item for material, whereas under the present method we can deliver material into the shops for about 1.5 cents per item. Greater production from these skilled mechanics is another saving. During the month of September the messengers at the point mentioned made 4,178 calls, picked up 7,800 requisitions, and delivered by messenger 9,500 items of material. A total of 1,200 tons of supplies were moved into the shops by tractor from the stores proper, and 1,007 tons by auto truck in addition to the tonnage handled by this equipment throughout the city and terminals generally.

Great Progress in Reclamation

Years ago little or no thought was given to scrap or reclamation. It was left pretty much to each department to report for sale what they had when cleaning up in the spring of the year, and with the exception of possibly wheels, and cast scrap, it was usually sold without sorting. Usually the scrap buyer or bidder wanted to see his material, which meant that he had to come to the yard to look it over. This sometimes led to collusion between the loader and the buyer, and also placed the buyer who resided at some distance at a disadvantage. Scrap is now sold on tender under standard classifications.

In sorting it was found that a great deal of good material had found its way into the scrap, and a huge tonnage of material could be made serviceable again with slight labor. This was the beginning of reclamation.

Reclamation is making fit for further service that material which has been discarded. The fundamental principle underlying reclamation is that nothing should be reclaimed that will not be needed or that cannot be reclaimed at a saving. An accurate record must be kept of each operation, from which monthly reports are made, showing results, and the saving or loss on each commodity. It is almost unbelievable what a properly organized and equipped department of this nature can accomplish in the way of saving. During 1925, the value of the material reclaimed, on the Canadian National, reached hundreds of thousands of dollars. This is in addition to the sale of scrap including rail, wheels, scrap brass, eac., which brought over $3,500,000. During the same period rail saws installed at Winnipeg, London, Belleville, Montreal and Moncton, reclaimed by sawing and redrilling 57,000 gross tons of rail for further use on branch lines.

Striking Reductions in Stock

Within the past few years railroad supply officers have been concentrating on line stocks. Where it has been the practice for district engineers, roadmasters, bridge and building masters, to estimate and order a season's supply of material forwarded to the line, and store it at some convenient point, it has many times been found that the work would be cancelled or all supplies not used, the balance then remaining on hand for an indefinite period. The result was that large accumulations took place which were seldom, if ever, shipped back to the stores where they could be re-issued again for current use. In the meantime, considerable deterioration took place. Today this material is not being shipped to the using department, but is being yarded at terminals under the jurisdiction of the stores department, where it is pooled, not for one particular division or territory, but for any territory.

The question is often raised as to what these modern methods mean in net assets or in the balance sheet. On the Canadian National they mean that where the total stocks controlled by the stores department were valued at approximately $25,000,000, there have been decreases every year since 1921, until the stock on hand of material is now approximately $12,000,000. Included in this $12,000,000 there is approximately $1,200,000 of material that has been taken back from the line and is now controlled by stores as line stock material. In addition, our turnover on material has been increased from 10 per cent and 12 per cent to an average of 24.6 per cent in 1926 to date. Such figures, particularly when viewed from the standpoint of a road of such length as the Canadian National with all its varied conditions and facilities resulting from the consolidation of several roads and also from the necessity of procuring much of its material, approximately 30 per cent in fact, from the United States, leave no doubt of the results of the changes which have been brought about by modern storekeeping methods.

EMPLOYEES OF THE American Railway Express Company, said to number over 65,000, have asked for increases of pay ranging from ten cents to fifteen cents an hour; and representatives of the employees and of the company have chosen arbitrators to whom the question will be referred. The employees have selected William B. Wilson of Pennsylvania, former Secretary of Labor, and the company has selected E. A. Stedman, a vice-president, as its representative. These two are given five days in which to select a third member.

Annual Report of the I. C. C.

Recommends legislation on consolidation, valuation and recapture

WASHINGTON, D. C.

THE amendment of the recapture provisions of the transportation act as to the bases for the computation of value and the manner of enforcement, is the principal new recommendation made by the Interstate Commerce Commission in its fortieth annual report to Congress, covering the twelve months ended October 31. The act needs "clarification," the report says, to afford it a basis for recapture purposes pending the determination of final values according to the provisions of the valuation act, as under the program on which it is working the commission expects to have completed only primary valuations as of their respective valuation dates by June 30, 1928.

"Pending determination of final values under section 19a," the report says, "a base simple in application might well suffice for practical purposes with resultant saving in time and money not only to the government but to the carriers. A number of bases may be suggested, as, for example, the investment accounts stated in accordance with our applicable accounting rules and regulations; the outstanding capitalization; or our primary valuations under section 19a as brought to date, either by adding to recorded cost of net additions and betterments since valuation date, a method which gives weight to expenditures incurred during the recent periods of high prices, or by the use of percentage factors applied to 1914 prices. Other bases may possibly be suggested."

As to enforcement the report says that the law leaves unsaid whether the recovery of recapturable income shall be effected by proceedings in court and, if so, whether by action at law or suit in equity, brought by the commission or by the United States.

The commisison repeats its previous recommendations that the consolidation provisions of the law be amended by omitting the requirement of a complete plan of consolidation and that the commission be given broad powers to approve or disapprove such consolidations, acquisitions of control, mergers, or unifications in any appropriate manner. There is also repeated the previous recommendation, to which the commission invites serious attention by Congress, as to the necessity for some amendment of the valuation statute as to the method of bringing valuations up to date and keeping them approximately current. Two suggestions are submitted, which are said to present fundamentally different theories of valuation, one by adding to or subtracting from the original valuation the net property changes, and the other by ascertaining and determining the condition and value of the property from time to time according as the commission may have occasion to use the valuation.

Other recommendations are for legislature: To punish the bribery of carrier employees to influence action or decision with respect to car service; to require the use of steel or steel underframe cars in passenger-train service, subject to appropriate exceptions, and to prohibit the use of wooden cars between or in front of steel or steel underframe cars; to make it the duty of carriers to furnish reasonable facilities to employees of the commission for the inspection of safety devices, with provision for transportation on locomotives or freight trains at reasonable compensation; and to provide a time limit such as six months for the filing of claims under section 204. The commission also urges reconsideration by Congress of sections 19, 27, and 28 of the merchant marine act.

Although the report includes many statistics showing the increased traffic being handled by the railroads and increased efficiency of operation, anything like the enthusiastic commendation of the improvement in railroad transportation service as to promptness and dependability, such as is given by the President in his message to Congress and in the annual reports of the Commerce and Treasury departments, is rather conspicuously absent.

The formal complaints filed with the commission during the year covered by the report numbered 1,524, an increase of 19 as compared with the year before. The commission decided 1,035 and 292 were dismissed by stipulation or on complainants' request, making a total of 1,327 disposed of, as compared with 1,177 during the previous period. The commission conducted 1,584 hearings and took approximately 302,875 pages of testimony, as compared with 1,502 hearings and 246,069 pages during the previous period.

Referring to its plan of "shortened procedure" by which written memoranda are used in place of hearings, the report says that during the year the use of the shortened procedure was suggested by one or more of the parties in approximately 33 per cent of the cases placed on the shortened procedure docket. In cases handled under this procedure and thus far decided the average elapsed time to reach a decision has been 455 days from date of receipt of complaint and 359 days from date of receipt of complainant's memorandum of facts and argument. No figures are given as to the elapsed time in cases on the regular docket.

Rate readjustments were protested and suspension asked in 643 instances, of which 83 represented reductions and 560 increases in rates. In 268 the commission suspended the schedules, in 169 it refused to suspend, and in 206 cases schedules were rejected, requests for suspension were withdrawn, or the protested schedules were withdrawn.

Reports have been made and published during the year in 11 investigations instituted on the commission's own motion and 23 investigations are listed as among the more important of those pending.

In connection with the work of the Bureau of Finance the report shows that 52 certificates were issued during the year authorizing 1,573.7 miles of new construction and that 10 applications, for 503 miles, were denied. Forty-nine certificates were issued authorizing the abandonment of 592 miles, and 5 applications, covering 73 miles, were denied.

Since the effective date of paragraph 2 of section 5 of the act, in 1920, the commisison has authorized thereunder acquisition of control over approximately 31,000 miles of line and during the past year 51 applications have been filed and 48 granted, authorizing the acquisition of 6,328 miles.

Issues of securities to the amount of $862,628,862 have been authorized during the year, including $572,657,997 mortgage bonds, $134,917,970 of equipment

trust obligations, $124,650,103 of stock, and $26,120,892 of notes.

Excess income has been reported by carriers covering the period to the end of 1925 amounting to $15,054,695, calculated on many different bases of value, and the total payments made by carriers under the recapture provisions up to November 1 were $6,618,049. Interest brings the amount in the general railroad contingent fund up to $7,123,268, but as the bulk of the payment has been made under formal protests and reservations the fund has not been made available for the purposes contemplated by the statute.

Under section 209, providing for a guaranty for the six months following the termination of federal control, the commission has settled 513 claims aggregating $651,745,875, by certifying amounts aggregating $508,680,612, while it has disallowed $143,065,263 and dismissed 132 claims. On the 22 unsettled claims the commission has certified as advances and partial payments $20,957,010 and it estimates that it will require approximately $830,000 to settle the claims outstanding. During the year $11,327,764 was repaid on account of the principal of outstanding loans made from the revolving fund created by the transportation act.

Some extracts from the commission's report are as follows:

Railroad Earnings

The growth in net railway operating income is accompanied by, and in part dependent on, a growth in the investment. For 1920 the investment accounts show an average per mile of $81,954, as contrasted with $95,283 in 1925, the totals being $19,849,000,000 for December 31, 1920, and $22,709,000,000 for December 31, 1925, an increase of $2,860,000,000 in five years, or an annual average increase of $572,000,000. This is the net difference of the additions and retirements shown in the property accounts, without deduction for accrued depreciation. These totals relate to all operating roads, except switching and terminal companies, with the inclusion of the property of leased lines. An addition of $572,000,000 to the net investment means an increase of $32,890,000 annually in the interest or dividend charges, assuming that money invested out of net revenues is to earn the same return as new money invested in the property. We are without an authoritative fair property value with which to compare the net railway operating income. Upon the book value the return in 1925 was approximately 5 per cent.

In the five-year period 1920-1925 the total railway capital, being the sum of funded debt and stock, increased from $20,098,046,374 on December 31, 1920, to $21,799,241,424 on December 31, 1925, an increase of $1,701,195,050, or an average of $340,000,000 per annum. The ratio of net income, after fixed charges, to the capital stock was 8.20 per cent in 1925. This is nearly equal to the corresponding figure, 8.40, for the calendar year 1916, the record year for this ratio.

The dividends declared by all operating roads, except switching and terminal companies, including those paid in some cases by one corporation to another, amounted to $349,000,000 in 1925. This was less than the average amount of dividends declared in the five-year period ended June 30, 1914. The capital stock outstanding was nearly $1,000,000,000 greater, the funded debt about $2,000,000,000 greater, and the book investment $6,700,000,000 greater in 1925 than in the five-year period ended June 30, 1914.

The railway net earnings in recent years appear more satisfactory in the eastern and southern districts than in the western. Although the recovery from war conditions has been slower in some regions than in others, every region shows an improvement in its operating ratio each year in the period 1920-1925, and in the first eight months of 1926 the ratio is approximately the same as, or better than, the corresponding figure for 1925 in every operating region.

Co-operation of Federal and State Commissions

In our last report we referred to the strengthened co-operative plan adopted October 17, 1925. In an increasing number of instances its principles have been applied. A check of our records discloses that 27 state commissions have co-operated with us in 51 rate cases in which interstate-intrastate rate relations were in some manner involved, 22 in 44 construction and abandonment cases, and 6 in car-service cases. Moreover in matters affecting car service nearly all of the states have lent us their aid. In some no occasion arose, and in others more than one.

Bureau of Valuation

The bureau has bent its chief endeavor, this year as last, to the process of arriving at primary valuations, as of mid-year dates of inventory ranging from 1914 to 1922, and to checking the carriers' returns to valuation order No. 3, in order to facilitate the bringing of primary valuations down to a current date, and also for the purposes of recapture.

The number of tentative valuations served is shown in the following table:

Item	Oct. 31 of year—	Number of reports	Number of corporations	Miles of road	Per cent of total mileage
Tentative valuations.....	1926	894	1,328	160,486	65.67
Tentative valuations.....	1925	657	981	125,758	51.46

Hearings on protests against tentative valuations were concluded in 227 cases, covering 53,405 miles, or 21.85 per cent of the total mileage, bringing the total number of cases in which hearings have been completed up to 439, covering 97,005 miles, or 39.69 per cent of the total. Sixty-three cases, covering 37,884 miles, or 15.50 per cent of the total reported, have been heard in part.

The total number of cases in which final value reports have been issued down to October 31, 1926, is 383, covering 16,508 miles. Of these, 164 cases, covering 10,898 miles, were decided after hearings on protests against the tentative valuations. The remaining 219, covering 5,610 miles, have become final by operation of law through lack of protest, and formal reports have been issued to that effect. In 62 other cases, covering 1,466 miles, no protest was filed within the statutory period, but reports declaring the tentative valuations final have not yet been issued. Our valuations have thus become final in 445 cases, covering 17,974 miles, or 7.3 per cent of the total mileage.

Bureau of Accounts

Our duties under section 15a of the interstate commerce act have made it necessary to confine the field work of our bureau of accounts almost exclusively to examinations of carriers' accounts in connection with possible recapture by the government of excess earnings under that section. Similar examinations have been made in connection with certain delayed claims under section 204 of the transportation act, 1920. All told, 421 examinations were made under section 15a and 24 under section 204. The investigation into the affairs of the Chicago, Milwaukee & St. Paul Railway Co. also

required the services in the field of a number of our accountants for a considerable period of time.

Class-rate Readjustments

An important feature of our work upon the railroad freight rate structure has been the comprehensive investigation of class rates which have been carried on during the past few years. It is our hope that they will result in a structure simpler and more consistent than that which now exists and that they will pave the way for revisions of commodity rates. We also hope that they will have the effect of materially reducing the number of rate complaints upon which we must act. A prolific source of such complaints in the past has been the apparent discriminations between competing shippers and localities often created by absence in the rate structure of anything resembling uniformity and design. It is our further expectation that the groundwork so laid will facilitate the consideration of the entire rate structure, both class and commodity, in the light of the Hoch-Smith resolution with a view to establishing proper relations in rate levels between the various articles of commerce.

Motor-bus and Motor-truck Operation

On May 21, 1926, we entered upon an investigation on our own motion into and concerning the general question of the operation of motor-busses and motor-trucks by, or in connection or competition with, common carriers subject to the interstate commerce act. When we instituted this investigation last May it was thought possible that we might submit a report based thereon to Congress at the session convening December 6, 1926. The size of the record, due to the scope of the inquiry and the numerous and diverse interests involved, and the fact that parties who appeared have been allowed until November 15 in which to file briefs, make it impossible for us to report at that time.

Bureau of Traffic

Continued progress has been made during the past year toward simplification of the rate structure of the country.

There were filed 84,748 tariff publications containing changes in freight, express, and pipe-line rates, passenger fares, and freight classification ratings. In addition thereto, 968 publications were received for filing but were rejected for failure to give the notice required by the statute. Powers of attorney and certificates of concurrence were also filed aggregating 42,833. Applications received seeking special permisison to establish rates or fares on less than statutory notice or waiver of certain of our tariff-publishing rules numbered 5,216. Specific orders were entered granting 4,312 and denying 575 of these applications. The remainder were disposed of otherwise.

Bureau of Inquiry

For violations of the interstate commerce act and related acts 19 indictments were returned and eight informations were filed. Four penalty suits were filed, of which three were for disobedience of our orders and one for failure to grant access to records. One injunction proceeding under section 3 of the Elkins act, to restrain the granting and accepting of concessions and discriminations in respect to interstate transportation, was instituted. Thirty-nine cases were concluded. The fines and penalties imposed aggregated $80,225.

During the year prosecutions have been instituted against seven carriers for violations of the long-and-short-haul clause of section 4 of the interstate commerce act. Other indictments returned and informations filed charged the falsifying of records of common carriers, unlawful use of interstate passes, false billing of shipments and filing of false claims by shippers, and frauds in connection with the issuance and use of bills of lading.

Bureau of Service

Our definite policy of seeking to bring about the greatest possible measure of co-operation between shippers and carriers has contributed largely to efficiencies and economies of operation and has facilitated transportation. Our service agents are constantly assisting in the adjustment of differences and complaints of a local nature between shippers and carriers.

We have continued to stress the need for heavier car loading, increased car mileage, preclassification of cars in freight trains, and observance of car-service rules, all important in their bearing on efficiency in operation.

Bureau of Safety

During the year ended June 30, 1926, 125 cases of violation of safety appliance laws, comprising 370 counts, were transmitted to the United States attorneys for prosecution; cases comprising 655 counts were confessed and 136 dismissed, while 25 counts were tried, resulting in judgment for the government on 22 and adversely to the government on 3. One count decided in favor of the government was appealed by the defendant and affirmed by the circuit court of appeals. In one count decided adversely to the government a motion for a new trial has been filed and is still pending. Of the 54 counts awaiting decision last year, 10 were decided in favor of the government, 3 were dismissed by the court, judgment was indefinitely suspended by the court on 40 counts, and 1 count is still undecided. Two counts pending on appeal last year were decided in favor of the defendant. On June 30, 1926, there were pending in the various district courts 129 cases containing 336 counts.

There were 37 cases of violation of hours of service laws, comprising 163 counts, transmitted to United States attorneys for prosecution; cases comprising 272 counts were confessed, 129 dismissed, and 10 tried, resulting in judgment for the government on 6 and adversely to the government on 4. The motion for a new trial as to 15 counts, which was pending last year, has been denied. On June 30, 1926, there were pending in the various district courts 30 cases containing 169 counts.

Approximately 1,445,000 cars and locomotives were inspected. The number of defects per 1,000 inspected was 40.02. The corresponding record for the preceding year was approximately 1,214,000 inspected, with 42.46 defects per 1,000.

Hours of service reports were filed by 1,124 railroads, of which 772 reported no instances of service of their employees in excess of the limits prescribed by law. The remaining 352 railroads reported a total of 42,200 instances of excess service as compared with 37,497 instances of excess service reported by 360 railroads for the preceding year.

We investigated 104 train accidents, of which 61 were collisions and 43 derailments. The collisions resulted in the death of 114 and the injury of 945 persons; the derailments resulted in the death of 78 and the injury of 666 persons, a total of 192 killed and 1,611 injured.

Bureau of Locomotive Inspection

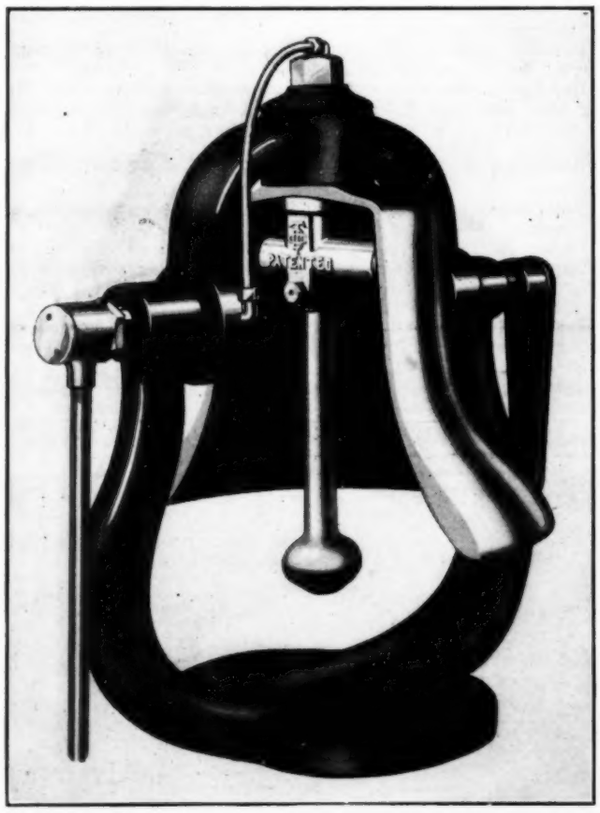
The percentage of locomotives found defective decreased from 46 per cent during the year 1925 to 40

per cent during this year. The condition of the motive power is reflected in the number of accidents and casualties to persons resulting from failure of parts and appurtenances of locomotives and tenders. There were decreases of 16.8 per cent in the number of accidents, 13 per cent in the total number of casualties, and 13.6 per cent in the number of persons seriously injured, but an increase of 10 per cent in the number of persons killed, as compared with the previous year.

No prosecutions for violations of the locomotive inspection act were instituted. Three cases previously filed, covering 63 counts, were disposed of by judgment against the carrier in one case, compromise upon payment by the carrier of the penalties sued for in another, and judgment in favor of the carrier in the third case.

Internal Quick Acting Bell Ringer

THE accompanying illustration shows the arrangement of an internal bell ringer recently placed on the market by the Transportation Devices Corporation, Continental Bank Building, Indianapolis, Ind. This type of ringer is simple in construction, having only one moving part, and, because the bell is stationary while the ringer is in operation, it eliminates the possibility of the bell turning over.



Air Operated Bell Ringer Which Moves the Clapper While the Bell Remains Stationary

This type of ringer may be applied to the conventional design of locomotive bell. The entire ringer equipment consists of a hollow stem bolt which replaces the bolt ordinarily used to hold the bell to the bell yoke; the bell ringer operating cylinder, piston and cap; the special clapper which replaces that on the present bell and the fittings for the air supply.

The bell ringer is supplied with air through a swivel fitting on the end of the bell trunion, an air passage being drilled through the trunion to connect with a passage in the bell yoke. As may be seen in the illustration, air is carried from this point to the top of the bell yoke by a copper pipe, from which point it passes down through a hollow stem bolt to the bell ringer operating cylinder.

The bell ringer strikes the bell on one side only making 150 to 180 strokes a minute with a 90-lb. air pressure. As the bell is stationary while the bell clapper is moving, there is no tendency for the bell to turn over with the attendant objectionable results. The bell can be operated either by the ringer or by a bell rope without one interfering with the other. No adjustments can be made to this ringer nor, it is claimed, are any necessary. There are on piston rings, valves, stuffing boxes nor adjusting nuts incorporated in the design. The bell ringer, being inside the bell is protected from the weather.

Alaska Railroad Deficit, $1,017,860

WASHINGTON, D. C.

THE government's Alaska Railroad was operated during the fiscal year ended June 30, 1926, at a deficit of $1,017,860, including its water lines, according to the annual report of the governor of Alaska to the Secretary of the Interior. The report is based on that of the general manager of the road, N. W. Smith, and much of it is repeated in the report of the Secretary of the Interior, although he gives the deficit on some other basis as $1,169,202. The operating deficit was a reduction of $557,289 or 35.4 per cent, as compared with the previous year. Revenues from all sources showed an increase of 23.2 per cent, while expenses were reduced 14.2 per cent. The total deficit for all expenditures, including charges to capital account, is stated as $1,690,751, a decrease of 18.3 per cent.

The Interior department recently issued a review of its work for the past three years, under the administration of President Coolidge, stating that the railroad, which was called completed at a cost of $60,000,000 in 1923 when President Harding visited Alaska and drove the golden spike, "is not a financial success," and that it had "soon developed that the road was not accomplishing the purpose for which it was built."

"A reappraisement of the entire physical condition of the railroad and the commercial possibilities contributory to financial operation was necessary," the department stated. This was made two years ago. An experienced railroad operator was loaned the government by the Pennsylvania Railroad for this purpose. Business principles were promptly applied to every branch of the railroad. Operations were reduced to conform with the traffic being handled. Subsequently this railroad expert was appointed general manager of the Alaska Railroad." It is also stated that whereas in 1923 the affairs of the road were being supervised through long distance administration from Washington, now the general manager located at the railroad's headquarters in Anchorage has supreme authority over its affairs, and the road "is being managed in the same manner as privately owned railroads in the states."

The report of the governor of Alaska says in part:

The general policies of the Alaska Railroad for the fiscal year 1926 were the same as those for the preceding year. These policies call for the completion of the Alaska Railroad and the purchase of modern equipment in pursuance of the estimate, previously prepared and submitted, amounting to $11,878,781. Because appropriations so far made for the purposes indicated in the estimate have provided only $1,865,000, including $500,000 available May 10, 1926, the greater part of the work yet remains to be done. The other important policy is that of economical and efficient operation of the property. The results obtained from the pursuit of these two policies are reflected in the improved financial condition shown in the statements accompanying this report. These statements do not show fully all the benefits that have been obtained, however, because they show the savings made in comparison with preceding years only, while if the work of completion and modernization had not been followed, increased costs would have been incurred in later years, when the accumulated results of deterioration and wear would have required heavy renewals to roadbed, structures, and equipment.

The improvements which have produced savings in maintenance and operation consist of the installation of steel bridges in place of trestles or wooden bridges supported on wooden piling, at points where such trestles or piling supporting the bridges were becoming so rotten that extensive renewals would have had to be made in order that their use could be continued without undue hazard to life and property; the filling in of trestles in the same condition, where there was no necessity for replacing with a bridge; the raising of the track where it had not, in the original construction, been raised to grade, and where this was necessary in order to protect the grade from overflow in times of flood by the adjacent streams; the widening of cuts and banks and riprapping the banks of streams, in locations where this work was not completed at the time of construction, thus decreasing maintenance work; the cost of clearing snow; transportation expense due to the delay from slides and washouts and reducing the hazard to life and property. Some progress was also made in placing increased depth of ballast under the ties, thus decreasing our maintenance-of-way costs of surfacing and lining the track and shimming of track in winter to improve the bad condition of surface resulting from frost heaves. The most notable addition to equipment was made by the purchases of a Brill 75 gas car, by the operation of which during the summer season the operation of one steam train between Anchorage and Fairbanks has been eliminated. Other improvements were made in our gas-car equipment and in our locomotive, passenger, and freight car equipment. Some additions were made in our machinery, labor-saving devices, and tools, but much remains yet to be done in providing more efficient and economical motive power and up-to-date cars, appliances, etc., particularly for construction and maintenance-of-way work.

The reduction in personnel has had careful consideration, but no further reduction of importance can be made in this direction, except as is possible by the expenditure of funds for completion and modernization of the road and equipment.

In reviewing the expenditures for maintenance and operation, compared with the last year, it should be borne in mind that there was an increase of 25 per cent in the gross revenue for the year 1926 over the year 1925, which means that we performed approximately 25 per cent more service. In certain departments, such as the transportation and maintenance of equipment departments, their expenses are increased in proportion to the amount of business handled, and in all departments some increase of expenses is a necessary result of increased business.

Payroll for 1925 amounted to $2,051,027, and for 1926, $1,914,548, a reduction of $136,480 or 6.7 per cent, with an increase in total income of $204,762 or 23.2 per cent. Attention is called to the fact that as the amount of money received as wages by the Alaska Railroad employees was less than in the previous year the result was a decrease in their purchasing power. The increase in railroad earnings shows an increase in other activities in Alaska of a greater amount than the figures at first indicate, because less goods were brought in and sold to the railroad employees, by reason of the payroll decrease, than in the previous year.

The average number of employees for 1925 was 981 and 980 for 1926.

Condition of the property, road, structures, and equipment at the end of the fiscal year 1926 is in general better than it was at the close of the previous fiscal year, but no unnecessary expenditures have been made for maintaining a higher standard of excellency than in the previous year. The standard adopted provides for keeping our track in safe condition for maintaining a maximum speed of 35 miles an hour with safety, except where grade, curvature, danger of falling rocks, or other conditions require in the interest of safety a lower speed limit.

The train service has also been performed on the same basis as in the past year, except that where equipment was available for gas-car service, substitution has been made for steam service. The service consists of two mixed trains; that is, trains with passenger equipment which also handle freight cars to the extent that such cars can be handled and schedule maintained, per week in each direction between Seward and Fairbanks, with an additional train on Sunday in each direction between Anchorage and Seward. During the summer months, and a weekly motor car service, also during the summer season, between Anchorage and Fairbanks. Additional passenger service is performed only when there are enough passengers to warrant such service, consisting of motor cars or steam trains, run as excursions or on charter, making special trips, the majority chartering these cars being fishing parties. On the Chickaloon branch mixed service of two trains a week in both directions is performed; on the Chatanika branch mixed service of twice a week during the entire year is performed, with such additional service in the summer as the business offered justifies. At the present time a round trip each week day is made. Freight service on the main line between Seward and Fairbanks is performed as nearly as possible only when there is sufficient freight tonnage offered for transportation to justify the running of a train.

The development in traffic is gratifying, not only in showing a marked increase over the traffic of last year, but more particularly as it reflects a general development of the territory, and that encouraging progress is being made in producing and marketing the resources of the territory.

FINANCIAL

Passenger revenue from rail operation for the fiscal year amounted to $202,834, an increase over the previous year of $31,282, or 12.5 per cent. Freight revenue was $566,811, an increase of $154,617, or 37.5 per cent. Rail-operation revenue from all sources was $994,355, an increase of $196,915 or 24.7 per cent.

Passenger revenue from river-boat operation amounted to $17,643, an increase over the previous year of $970, or 5.2 per cent. Freight revenue, $25,828, an increase of $5,850, or 29.3 per cent. All river-boat operation was $73,157, an increase of $9,360, or 14.7 per cent.

Revenue from all sources, including non-operating revenue, was $1,063,553, an increase of $204,762, or 23.2 per cent.

Rail-line expenses for ordinary maintenance and operation for the fiscal year was $1,850,527, or a decrease over the previous year of $193,587, or 9.5 per cent. Including replacement, the expense was $1,981,833, a decrease of $342,322, or 14.3 per cent.

River-boat expense was $106,225, a decrease of $2,460, or 2.3 per cent.

Total expense for rail line and river boats was $2,088,058, a decrease of $344,786, or 14.2 per cent.

Deficit for rail operation, $856,173, a decrease of $390,502, or 31.2 per cent; river-boat operation, $33,068, a decrease of $11,822, or 26.4 per cent; total deficit for rail and river boat operation, $889,241, or 31.1 per cent.

Total deficit for all expenditures, except those charged to capital account, $1,017,860, a decrease of $557,289, or 35.4 per cent.

Total deficit for all expenditures, including charges to capital account, $1,690,751, a decrease of $379,081, or 18.3 per cent.

"Gilt Edge Express," N. Y., N. H. & H., Near Canton, Mass.

Development Association Meets

Public relations work, agricultural and industrial development given consideration

AGRICULTURAL, industrial and public relations work, in addition to immigration, marketing and real estate, were given thorough consideration at the 18th semi-annual meeting of the American Railway Development Association, held at the Hotel Sherman, Chicago, on December 2 and 3, and attended by 200 representatives of the railroads of the United States, Canada, Africa and Mexico. Both the morning and afternoon sessions of the first day consisted of general meetings of the industrial, agricultural and public relations sections at which addresses were made on stock raising, dairying, agriculture and public relations. On the morning of the second day the association attended a meeting of publicity and public relations representatives of the western railways at the Union League Club, and discussed the farmer sentiment in general. Sectional meetings took place in the afternoon of the same day, the public relations section remaining in session with the publicity and public relations representatives at the Union League Club.

A new secretary and second vice-president were elected at this meeting, the former being M. C. Burton, industrial commissioner of the Atchison, Topeka & Santa Fe, and the latter H. W. Byerly, general immigration agent of the Northern Pacific. W. H. Hill, who has been appointed assistant manager of stock yards of the New York Central, tendered his resignation as president for the reason that his new occupation was not within the activities of the Development Association, but the membership would not accept the resignation.

General Meetings Discuss Many Subjects

At the general meetings addresses were made by E. S. Bayard, editor of the *National Stockman and Farmer*, Pittsburgh, Pa.; C. L. Burlingham, assistant general manager of the *Breeders' Gazette*, Chicago; John M. Guild, general secretary of the Kansas City Chamber of Commerce, and Walfred Lindstrom, president of the Indiana Bankers' Association, Pleasant Lake, Ind. A talk on public relations was made by P. T. White, general superintendent of the Cleveland, Cincinnati, Chicago & St. Louis, Indianapolis, Ind., while Rush Lewis, field representative of the Dairymen's League, New York, spoke on the dairying situation and L. S. Tenny of the Bureau of Agricultural Economics of the United States Department of Agriculture, addressed the meeting on the general agricultural situation. P. G. Redington, assistant forester of the United States Forest Service, gave a definite plan of action whereby the railroads can aid reforestation. L. H. Worthley, United States administrator, European Corn Borer Control, spoke on the subject "How Shall We Meet the Corn Borer Menace?" Dr. C. D. Lowe of the United States Department of Agriculture, spoke on marketing.

Mr. Burlingham outlined the opportunities of the present day youth in agriculture, comparing the conveniences of present day farming with those of 1890, and attacking the erroneous impressions of the conditions of agriculture formed during the past few years. He said that agriculture is not in mental, moral, political and financial decadence and that American agriculture will not fail, as too much depends on it for the country to continue to permit inequalities in the commercial scheme of things seriously to handicap its advance. Farming is starting up the scale; urban industries, in the main, after an unprecedented period of high prices and high wages, are only holding their rates of progress, not gaining.

Mr. Guild spoke on the industrial development of cities, giving suggestions for carrying on the work. He said that what chambers of commerce need is a full understanding of the fundamentals of industrial development, getting away from over-enthusiastic propaganda and giving more attention to the economics involved. The chambers of commerce should know more about business and trade conditions and the trend of industries and prepare themselves to meet the keen competition that is all around. In addition he said that good city government and the welfare of the worker, substantial public improvements and proper housing are all-important factors. Chambers of commerce should know about available markets.

Mr. Tenny, in outlining the general agricultural situation in America, expressed a satisfactory condition. "Looking back over the changes that have taken place since the general depression of 1921-22," he said, "it was possible to state at the beginning of this season that the economic position of the agricultural industry as a whole was one of considerable improvement over the years of the depression, but still one of incomplete recovery from the effects of that depression. Now that the present season is sufficiently advanced and a good part of the 1926 production already marketed, we may say that last year marked the temporary peak in the post-depression improvement and that this season's farm operations will result in a moderate decline from the recent gains."

Mr. Redington, in discussing reforestation before the agricultural section, suggested (1) that the railroads make a drive for the reduction of fires along rights-of-way and at the same time, through their extension activities, assist other extension agencies to change the point of view of people towards forest fires; (2) give constructive thought to and proper participation in the timber growing program in their respective territories and educate the woods owner; and (3) continue the work they have already started on the woods waste side of the problem and supplement this by intensive regional studies of wood waste.

A Favorable Farmer Sentiment Was Reported at Joint Public Relations Meeting

At the meeting with publicity and public relations representatives of western railways, Samuel O. Dunn, editor of the *Railway Age*, served as chairman. Owing to the illness of C. H. Markham, chairman of the Western Railway Committee, Mr. Dunn read a letter from Mr. Markham in which he urged the railways to spare no reasonable afforts, first, to help the farmers solve the problems of agriculture in order that the prosperity of the farmer may be increased and second, to inform the farmers regarding railway matters in order to cause farmer sentiment to favor reasonable regulation of railways.

J. B. Lamson, agricultural development agent of the

Chicago, Burlington & Quincy, opened the discussion on farmer sentiment and the farmers' conditions in general. According to Mr. Lamson, the farmer's mental attitude moves up and down like a barometer, in sympathy with his financial status. In times of prosperity he is optimistic, big-hearted and a free spender. When hard times come he is irritable, sensitive about his condition and willing to believe that all other lines of business have combined against him to try to take away the little that he has. He also said that questionnaires sent to farmers by the Farm Journal asking whether they favor having the government sell surplus crops in foreign countries, taxing all farmers who raise these crops, to cover the loss, showed 1,696 in favor and 3,167 opposed. Replies to another questionnaire asking whether they favor lowering tariff duties on manufactured goods from foreign countries even if tariff duties on foreign farm products would also be lowered, showed 1,234 in favor and 3,571 opposed.

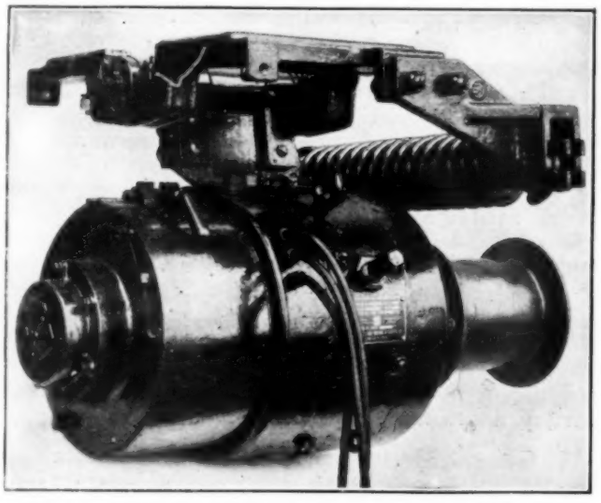
In the discussion that followed a general improvement in farmer sentiment was reported. O. K. Quivey, general agricultural agent of the Baltimore & Ohio, suggested that a transportation school of two or three days' duration should be held during the annual farmers' week which takes place in practically all states, so that the work of the public relations officers of the railroads might be brought to the attention of the group of men who work between the railroads and the farmers. This group of men should include county agents, agricultural extension representatives and the members of the agricultural colleges. O. J. Shorley, a North Dakota farmer, expressed the sentiment of farmers in that territory as being favorable toward the railroads. He also said North Dakota farmers have long realized that the railroads of the country are carrying their share of the taxation burden.

On the New Haven

Car Lighting Generators of Reduced Weight

CAR lighting generators manufactured by the Safety Car Heating & Lighting Company, New Haven, Conn., are now being made with drawn steel magnetic frames in place of the cast steel frames used previously. The reduction of weight effected by this change amounts to about ten per cent of the weight of the generator, including the supporting lug and pulley. The actual weight reduction for different types of machines amounts to about 50 lb. This is offered as one factor toward reducing dead weight of cars and as an aid to handling generators in the shop. It is also expected to show an increase in belt life as the strain on belt fasteners caused by coupling shocks will be reduced.

The drawn steel frames are made up of three parts, the pulley end housing, the commutator end housing and the center part, approximately 1 in. thick. The field yoke



Safety Car Lighting Generator with Drawn-Steel Frame

or center portion is made by rolling a flat slab of steel of the proper magnetic quality into the form of a cylinder and welding the edges. It is then worked by a die to bring it into perfect cylindrical form. The end housings are drawn from 9/32-in. steel into the necessary cup form and openings for the heads and inspection holes are sheared out in large presses. Finally the field yoke is machined and the end housings secured to it by fusion welding. After the frame has been completed as described, it is machined to get the proper diameter for the application of the poles for the head fits and is drilled and tapped.

The generator suspension remains essentially unchanged except for the supporting lug. This instead of being cast as a part of the frame is now made of pressed steel and is secured to the generator frame by eight steel bolts. Grease lubricated bronze suspension bearings insure free swinging of the generator.

All of the features of interchangeability of parts have been retained so that with three drawn steel frames and six armatures it is possible to have machines of six different capacities, varying from one to four kilowatts. The distance from the center line of the car to the center line of the pulley is the same on all machines so that a small machine can be replaced by a larger one without changing the axle pulley or the suspension frame.

General News Department

The Canadian Railway Club will hold its next meeting on December 14 at the Windsor Hotel, Montreal, when a paper will be read on "Lubricants and Lubrication," by J. Duguid, engineer of tests for the Galena Signal Oil Company, Franklin, Pa.

The Society of Terminal Engineers will meet in the Engineering Societies' building, New York, at 8 p. m. on December 14 at which time an illustrated lecture on "Preservation of Marine Structures" will be delivered by Col. W. G. Atwood.

The Western Railway Club will hold its next meeting on Monday evening, December 20, at the Hotel Sherman, Chicago. The meeting will be preceded by the usual Dutch treat dinner. The speaker of the evening will be W. E. Woodard, vice-president of the Lima Locomotive Works, who will discuss "Locomotive Design in Relation to Modern Operating Conditions." Mr. Woodard will show a motion picture in connection with his address.

J. P. Hoelzel, president of the Gary Screw & Bolt Company, entertained a large party of railway and railway supply men at a buffet supper at the Blackstone hotel, Chicago, on the evening of December 1, in honor of E. A. Clifford, recently appointed general purchasing agent of the Chicago & North Western and Norman C. Naylor, recently appointed district sales manager of the American Locomotive Company and the Railway Steel Spring Company.

Correction

The report of the Interstate Commerce Commission concerning the installation of signals on the railroads during 1925, published in the *Railway Age* of November 20, page 1006 was in error in that the signals on the Chicago, Rock Island & Pacific were reported as being of the color-position light type whereas the aspect indicates color only and not position.

Canadian Clerks' Wage Case to Be Arbitrated

D. R. C. Maclean, a Winnipeg lawyer, has been named chairman of the Board of Conciliation which will arbitrate the dispute over wages and working conditions between railway clerks, freight handlers and station employes on the eastern and western lines of the Canadian Pacific and the Canadian National. David Campbell of Winnipeg will represent the employees, and J. B. Coyne, a Winnipeg lawyer, will sit for the railways. In the absence of any joint recommendation, the Minister of Labor has appointed Mr. Maclean chairman. The dispute effects 6,300 men directly who are members of the Brotherhood of Railway and Steamship Clerks, Freight Handlers, etc. They are asking the adoption of their new schedule of wages and working conditions.

The Positive Meet on the U. & D.

The Ulster & Delaware, running three first-class trains each way daily, except Sunday, has adopted the "positive meet"; that is to say, a paragraph has been added to Rule 83 to the effect that trains must wait indefinitely at meeting points for opposing trains of the same class, unless otherwise directed by train order. At meeting points, eastward trains, both regular and extra, take the siding, unless otherwise directed. Rules 71, 72 and 88 have been modified accordingly. This road, from Kingston, N. Y., on the Hudson river, westward to Oneonta, N. Y., is 107 miles long, and runs usually two freight trains a day each way, which are always run as extras. During the summer season the number of passenger trains is about doubled. L. Phelps, the superintendent, states that the positive meet, which has been in operation since September 12, has proved highly satisfactory; the dispatchers and trainmen are reported much pleased with the change. There was a failure of wires during a severe storm last month but without any ill effect in this connection. Prior to the adoption of the change, each man in the train service was examined to make sure that the modified rules were clearly understood.

Health on the Central of Georgia

J. J. Pelley, president of the Central of Georgia, speaking of the surgical department of that road, and recounting various activities of the department in the promotion of sanitary measures in the territory along the line of the road, suggests that the department might be more accurately described as the Department of Health and Physical Welfare. Since 1919, waste land has been reclaimed and drainage improved so that malaria has been measurably controlled. The records of 23 crews of trackmen on the southwestern division of the road, in 1919, show that 503 days' time were lost because of malaria alone; while in 1921 the same crews lost but 83 days. Bridge and building crews on that division in 1919, lost 605 days from malaria; in 1922, only 21 days. The warfare against mosquitos, conducted by the railroad, has encouraged numerous communities to follow the road's example in draining and oiling. The road deals actively with typhoid and hookworm, furnishing free inoculation to employees. By education in first aid and other safety measures, the loss of time of injured employees (average) has been reduced from 27.8 days to 8 days. The chief surgeon of the company is Dr. Craig Barrow.

U. P. Wins Harriman Medal for Second Consecutive Year

For the second consecutive year the Union Pacific System has been awarded the E. H. Harriman Gold Medal for the most conspicuous accident prevention work in America during the last year. The award was made on the basis of records submitted to the Interstate Commerce Commission showing that not a single passenger was killed on this railroad system during 1925, though it operated more than 53,000,000 locomotive miles and more than a billion passenger miles; that only 5 employees were killed in non-train accidents, including shop accidents of all kinds, and only 407 employees were injured, in such accidents during 105,000,000 man-hours of work during 1925; and that in train and train service accidents only 24 employees were killed in 53,000,000 locomotive miles of operation.

The silver replica of the Harriman Medal was awarded to the Duluth, Missabe & Northern as having done the best safety work of the year among roads operating between 1,000,000 and 10,000,000 locomotive miles and the bronze replica of the Harriman Medal was awarded to the Green Bay & Western as the most conspicuous example of successful accident prevention work among roads operating under one million locomotive miles during the same year.

The awards were made by a committee consisting of John J. Esch, Interstate Commerce Commissioner; R. H. Aishton, president of the American Railway Association; Samuel O. Dunn, editor of the *Railway Age;* Dr. Julius H. Parmelee, director of the Bureau of Railway Economics; F. D. Underwood, president of the Erie, who was advisor to the committee; and Arthur Williams, president of the American Museum of Safety, who was the committee's chairman.

In announcing these decisions Mr. Williams said: "The statistics examined by the committee of awards show a remarkable record of accident prevention on practically all of the railroads of America.

(*Continued on page* 1184)

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1926

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rents.	Net after rents, 1925.
Akron, Canton & Youngstown	Oct.	171	$297,886	$353	$308,697	$56,979	$35,038	$12,649	$87,959	$20,199	$206,824	67.0	$101,873	$85,357	$42,383	$54,692
	10 mos.	171	2,647,052	3,973	2,766,493	517,765	300,434	112,851	784,879	161,133	1,870,166	67.6	896,327	711,702	361,959	574,737
Ann Arbor	Oct.	293	522,606	20,443	561,516	56,669	102,911	12,720	206,185	16,900	389,934	69.4	171,982	146,382	145,735	132,320
	10 mos.	293	4,478,210	243,068	4,886,218	528,725	1,021,735	119,473	1,931,648	132,227	3,711,408	76.0	1,174,810	940,913	832,373	904,097
Atchison, Topeka & Santa Fe	Oct.	9,321	16,502,448	2,901,524	20,914,945	2,219,944	3,596,614	374,009	5,388,504	408,739	11,928,450	57.0	8,986,495	7,168,591	7,229,121	7,704,618
	10 mos.	9,273	125,916,204	32,859,110	171,686,076	23,290,434	31,720,636	3,627,137	49,696,740	3,719,075	111,613,654	65.0	60,072,422	44,736,332	44,368,186	34,992,644
Gulf, Colorado & Santa Fe	Oct.	1,944	2,947,023	251,165	3,347,221	438,723	542,725	53,155	979,222	68,614	2,076,621	62.0	1,270,600	952,429	819,592	1,025,537
	10 mos.	1,912	22,326,829	2,457,365	26,045,088	4,622,516	4,874,886	511,374	8,321,660	642,210	18,928,409	72.7	7,116,679	5,998,133	4,635,707	3,473,837
Panhandle & Santa Fe	Oct.	954	1,294,307	171,967	1,558,892	129,941	283,219	10,340	533,954	23,284	974,473	62.5	584,417	529,860	372,764	453,394
	10 mos.	926	10,633,259	1,381,178	12,708,400	1,171,122	2,331,146	97,887	3,749,826	207,781	7,514,449	59.1	5,193,950	4,515,011	3,690,849	1,928,991
Atlanta & West Point	Oct.	93	174,721	64,934	275,692	34,891	42,351	12,602	96,854	12,276	204,777	74.3	70,915	50,686	41,114	52,357
	10 mos.	93	1,663,108	689,350	2,663,987	357,448	479,816	112,818	941,359	118,162	2,029,306	76.6	624,681	459,033	361,755	367,713
Western of Alabama	Oct.	133	190,139	65,191	285,591	42,163	47,581	13,010	88,902	12,484	209,309	73.3	76,282	61,228	60,839	110,795
	10 mos.	133	1,928,663	644,620	2,826,467	344,522	548,270	119,025	884,680	118,891	2,059,607	72.9	766,860	599,047	580,879	688,980
Atlanta, Birmingham & Atlantic	Oct.	639	383,461	38,822	468,638	110,498	86,096	26,732	166,966	18,155	421,881	90.0	46,757	32,472	28,615	37,955
	10 mos.	639	3,910,382	434,722	4,807,803	1,110,185	881,440	275,112	1,773,210	183,264	4,347,780	90.4	460,023	320,322	167,325	101,185
Atlantic Coast Line	Oct.	4,930	5,305,949	1,315,599	7,313,297	1,143,615	1,612,342	138,783	2,715,510	165,176	5,816,950	79.5	1,496,347	944,874	1,043,181	1,907,594
	10 mos.	4,927	56,391,107	18,316,946	81,040,481	10,685,020	15,492,515	1,530,695	28,826,474	1,692,445	58,864,601	72.6	22,175,880	16,639,824	14,610,711	16,995,064
Charleston & Western Carolina	Oct.	342	267,603	19,922	300,684	49,683	47,481	7,181	119,987	6,872	231,204	76.9	69,480	49,467	48,137	81,251
	10 mos.	342	2,894,339	230,853	3,259,881	591,392	466,828	74,458	1,256,022	66,572	2,455,228	75.3	804,653	595,052	523,698	621,625
Baltimore & Ohio	Oct.	5,286	19,901,446	2,409,810	23,899,632	3,200,116	4,560,086	423,752	7,864,481	596,183	16,851,115	70.5	7,048,517	5,856,087	5,655,088	5,416,924
	10 mos.	5,292	171,614,669	23,534,831	208,671,555	26,430,195	44,365,884	4,171,820	71,111,269	5,383,215	153,306,385	73.5	55,365,170	45,807,602	43,234,603	35,076,446
Baltimore & Ohio Chicago Term.	Oct.	80	.....	.....	370,122	27,899	38,359	1,980	174,574	15,698	264,237	71.4	105,885	48,321	137,046	147,782
	10 mos.	80	.....	.....	3,188,867	325,128	340,548	19,618	1,616,235	123,672	2,484,422	77.9	704,445	183,501	1,132,777	1,047,848
Staten Island Rapid Transit	Oct.	23	117,129	116,356	268,918	42,485	17,103	1,816	109,604	17,861	188,869	70.2	80,049	63,549	24,357	—31,193
	10 mos.	23	1,073,936	1,253,179	2,689,383	468,815	292,013	20,814	1,108,641	153,466	2,043,749	76.0	645,634	476,283	115,557	—113,311
Bangor & Aroostook	Oct.	615	693,210	48,653	754,434	94,119	114,393	4,441	165,357	23,294	405,376	53.7	349,058	276,521	316,990	223,562
	10 mos.	615	4,868,923	616,034	5,732,498	978,446	1,152,130	51,203	1,494,986	226,318	3,935,687	68.7	1,796,811	1,319,642	1,616,984	1,501,630
Belt Ry. Co. of Chicago	Oct.	32	.....	.....	758,366	80,027	73,178	3,209	318,903	9,628	484,945	63.9	273,421	225,010	172,905	161,931
	10 mos.	32	.....	.....	6,338,791	619,815	644,268	32,733	2,877,664	91,659	4,266,139	67.3	2,072,652	1,588,257	1,689,716	1,421,537
Bessemer & Lake Erie	Oct.	228	1,850,838	11,260	1,890,567	107,058	325,234	14,034	394,899	30,448	864,993	45.7	1,025,574	855,374	905,546	669,244
	10 mos.	228	14,205,219	158,058	14,610,339	994,748	3,245,394	145,117	3,443,849	332,096	8,180,729	56.0	6,429,610	5,437,053	5,718,253	4,815,216
Bingham & Garfield	Oct.	33	43,211	16	46,097	20,532	12,445	1,575	9,839	5,344	49,839	108.1	—3,742	—9,771	4,939	12,122
	10 mos.	33	444,313	60	468,088	83,786	90,398	14,953	104,895	52,078	347,540	74.2	120,548	26,130	181,182	152,603
Boston & Maine	Oct.	2,169	4,855,756	1,561,011	7,274,045	1,255,327	1,359,286	72,975	2,713,618	232,944	5,653,545	77.7	1,620,500	1,353,701	1,027,252	1,329,991
	10 mos.	2,222	42,970,979	16,978,927	68,057,647	9,201,210	12,500,224	744,324	26,583,202	2,357,838	51,636,734	75.9	16,420,913	13,883,575	11,132,108	10,055,019
Brooklyn Eastern Dist. Term	Oct.	9	134,370	.....	140,540	7,013	13,054	294	48,880	5,617	74,858	55.3	65,682	55,808	55,808	50,587
	10 mos.	9	1,189,752	.....	1,260,874	81,750	142,468	4,097	448,883	61,133	738,331	58.6	522,543	444,087	452,557	427,972
Buffalo & Susquehanna R. R. Corp.	Oct.	253	99,066	1,885	109,079	27,296	42,325	1,619	37,120	7,610	115,970	106.3	—6,891	—9,138	3,672	—6,571
	10 mos.	253	936,995	26,096	1,011,905	277,510	392,695	18,469	344,902	78,433	1,112,009	109.9	—100,104	—127,851	—19,975	109,537
Buffalo, Rochester & Pittsburgh	Oct.	601	1,541,152	83,182	1,681,612	249,005	477,512	27,888	563,734	44,261	1,357,698	80.7	323,914	308,914	357,383	307,062
	10 mos.	601	13,616,736	1,039,523	15,204,571	1,856,314	4,210,940	285,520	5,272,387	445,145	12,084,423	79.5	3,120,148	2,588,975	2,805,892	1,965,863
Canadian Pacific Lines in Maine	Oct.	233	99,766	23,910	137,742	30,788	35,695	6,651	78,972	3,286	155,392	112.8	—17,650	—33,550	—38,660	—25,488
	10 mos.	233	1,553,071	300,012	1,984,389	452,659	434,280	53,929	906,010	33,849	1,880,727	94.8	103,662	—28,328	—139,419	—353,052
Central of Georgia	Oct.	1,917	2,131,128	421,923	2,874,081	372,263	465,977	76,037	959,347	100,176	1,974,439	68.7	899,642	733,144	698,989	707,552
	10 mos.	1,917	19,354,587	5,068,056	26,785,479	3,818,587	4,585,863	767,300	9,783,987	984,989	19,947,012	74.5	6,838,467	5,566,579	5,029,532	4,425,962
Central of New Jersey	Oct.	690	4,415,145	749,969	5,523,145	532,754	1,572,762	46,753	1,927,999	113,129	4,217,696	76.4	1,305,449	833,549	754,190	420,525
	10 mos.	690	38,961,840	8,076,674	50,285,015	4,739,366	11,223,584	451,864	18,306,870	1,264,436	36,206,780	72.0	14,078,235	9,866,801	8,676,212	7,700,599
Central Vermont	Oct.	433	599,382	112,261	788,926	118,463	114,888	26,293	336,846	22,084	618,987	78.5	169,939	150,494	137,174	159,143
	10 mos.	433	5,615,972	1,154,743	7,528,071	1,512,985	1,133,420	172,628	3,212,201	228,247	6,273,950	83.3	1,254,121	1,062,704	880,801	399,844
Chesapeake & Ohio	Oct.	2,650	11,375,935	724,324	12,641,340	2,025,864	2,505,917	117,409	3,266,172	261,011	8,206,511	64.9	4,434,829	3,675,543	3,816,971	2,987,392
	10 mos.	2,645	98,012,253	7,571,187	110,302,681	16,012,466	25,833,980	1,183,496	29,787,544	2,491,987	75,631,998	68.6	34,670,683	28,277,823	30,357,660	25,275,737
Chicago & Alton	Oct.	1,055	2,022,875	541,707	2,840,426	387,179	644,047	75,265	1,003,494	57,773	2,159,847	76.0	680,579	570,400	407,341	570,986
	10 mos.	1,055	18,272,570	5,457,935	26,004,928	3,553,057	6,195,014	712,905	9,331,349	621,782	20,364,073	78.1	5,700,855	4,615,847	2,904,880	3,703,085
Chicago & Eastern Illinois	Oct.	945	2,104,851	360,786	2,661,530	306,430	518,494	83,103	896,612	69,035	1,987,935	70.9	773,595	627,817	547,761	417,169
	10 mos.	945	17,572,269	3,935,223	23,279,486	2,557,052	6,090,172	792,991	8,467,609	695,880	18,753,146	80.6	4,526,340	3,223,800	1,993,993	1,471 980
Chicago & Illinois Midland	Oct.	133	126,514	6,147	138,452	29,416	34,117	3,040	48,849	9,904	125,326	90.5	13,126	7,680	15,513	71,835
	10 mos.	100	994,444	55,401	1,093,196	122,806	290,824	19,015	333,436	105,042	871,123	79.7	222,073	146,995	355,118	438.408
Chicago & North Western	Oct.	8,459	11,455,784	1,848,849	14,895,485	2,258,906	2,588,078	210,427	5,334,038	343,543	10,770,481	72.3	4,125,004	3,318,815	2,908,533	2,722,768
	10 mos.	8,458	93,583,749	22,135,036	130,067,467	18,842,187	26,214,253	2,040,045	48,135,881	3,399,283	99,226,413	76.3	30,841,054	22,812,265	20,960,701	18,353,938

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1926—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rents.	Net after rents, 1925.
Chicago, Burlington & Quincy	Oct.	9,404	$12,654,838	$1,963,341	$15,965,260	$2,278,789	$2,430,824	$242,195	$5,034,294	$370,787	$10,413,972	65.2	$5,551,288	$4,312,607	$3,981,394	$3,893,056
	10 mos.	9,404	100,009,464	20,433,770	133,452,934	18,819,659	25,300,067	2,581,303	44,650,420	3,579,787	95,592,992	71.6	37,859,942	27,914,735	25,244,064	23,324,416
Chicago Great Western	Oct.	1,496	1,992,486	267,623	2,450,503	346,236	464,474	77,685	876,827	59,141	1,835,657	74.9	614,846	518,861	361,408	406,011
	10 mos.	1,496	16,820,942	2,812,266	21,216,571	2,996,504	4,176,695	774,665	8,080,413	577,763	16,713,473	78.8	4,503,098	3,598,168	2,192,958	1,648,352
Chicago, Indianapolis & Louisville	Oct.	647	1,369,674	222,551	1,755,922	176,192	329,007	36,565	600,626	39,493	1,195,483	68.1	560,439	455,498	340,781	331,802
	10 mos.	647	11,752,266	2,253,129	15,495,019	1,499,568	3,255,840	366,992	5,450,127	347,313	11,065,911	71.4	4,429,108	3,548,350	2,523,853	2,252,530
Chicago, Milwaukee & St. Paul	Oct.	11,178	12,492,955	1,465,123	15,480,918	2,301,383	3,009,549	253,447	5,349,565	356,627	11,332,813	73.2	4,148,105	3,419,916	2,800,225	3,367,968
	10 mos.	11,192	104,040,896	16,401,490	134,178,623	21,132,350	30,307,380	2,532,991	49,482,342	3,446,768	107,486,221	80.1	26,692,402	19,208,593	15,302,942	12,999,478
Chicago River & Indiana	Oct.	19	.....	.....	669,030	90,120	78,675	727	240,413	17,983	427,918	64.0	241,112	187,213	325,385	302,502
	10 mos.	19	.....	.....	5,746,304	627,312	764,327	8,176	2,183,939	167,310	3,751,064	65.3	1,995,240	1,548,036	2,704,099	2,407,556
Chicago, Rock Island & Pacific	Oct.	7,552	9,144,328	1,864,473	11,991,765	1,544,639	2,403,064	228,270	4,042,053	305,471	8,516,933	71.0	3,474,832	2,836,289	2,505,479	2,477,855
	10 mos.	7,564	80,182,349	18,944,157	108,459,460	13,699,252	23,189,703	2,302,849	39,112,780	3,083,638	81,688,343	75.3	26,771,117	20,742,324	16,629,051	13,096,297
Chicago, Rock Island & Gulf	Oct.	458	490,981	80,633	612,257	57,621	77,797	19,150	234,113	16,880	400,654	65.4	211,603	193,506	179,986	126,534
	10 mos.	458	4,536,781	808,327	5,799,744	640,948	735,060	193,225	2,141,047	164,823	3,892,415	67.1	1,907,329	1,725,489	1,491,593	886,567
Chic., St. Paul, Minn. & Omaha	Oct.	1,746	1,939,710	347,605	2,476,393	316,615	436,770	31,072	965,298	78,133	1,830,888	73.9	645,505	531,587	452,567	416,045
	10 mos.	1,813	16,116,680	4,126,091	22,008,934	3,377,040	4,103,329	348,816	9,195,519	753,102	17,856,710	81.1	4,152,224	3,036,178	2,486,484	2,675,335
Cincinnati, Indianapolis & Western	Oct.	347	397,898	27,619	456,159	132,728	108,830	16,839	172,158	15,830	447,643	98.1	8,516	—9,984	—53,627	41,911
	10 mos.	347	3,532,939	272,467	4,067,849	828,650	921,918	160,202	1,578,638	180,063	3,676,542	90.4	391,307	208,474	—168,172	216,359
Clinchfield Railroad	Oct.	309	718,757	22,376	754,813	69,228	166,119	22,929	139,947	19,418	417,018	55.2	337,795	237,793	378,147	357,858
	10 mos.	309	6,478,994	257,962	6,863,001	729,773	1,757,986	225,497	1,317,814	199,682	4,223,080	61.5	2,639,921	1,979,768	3,041,730	2,837,406
Colorado & Southern	Oct.	1,056	1,113,153	115,979	1,328,301	210,931	239,723	12,919	438,487	43,312	952,965	71.7	375,336	311,775	265,283	313,687
	10 mos.	1,056	8,304,459	1,289,442	10,509,980	1,543,217	2,347,643	149,854	3,765,440	428,673	8,308,159	79.1	2,201,821	1,564,926	1,339,900	1,171,830
Ft. Worth & Denver City	Oct.	491	911,493	276,365	1,273,213	91,538	203,547	16,017	342,405	38,959	701,128	55.1	572,085	471,181	443,432	460,379
	10 mos.	491	7,740,185	2,179,691	10,625,948	849,332	1,798,192	175,581	3,089,776	385,851	6,385,736	60.1	4,240,212	3,530,210	3,359,699	2,547,051
Wichita Valley	Oct.	271	132,310	24,999	169,201	16,749	12,193	3	54,514	1,970	85,016	50.2	84,185	74,353	45,271	83,199
	10 mos.	271	971,009	193,138	1,248,531	159,658	92,783	180	431,161	18,290	692,214	55.4	556,317	459,927	261,625	321,285
Columbus & Greenville	Oct.	167	150,250	21,426	184,868	31,804	20,811	3,188	59,656	10,285	125,548	67.9	59,320	58,199	32,842	38,503
	10 mos.	167	1,247,674	230,349	1,577,593	397,580	190,563	32,041	552,178	102,746	1,273,434	80.7	304,159	289,664	122,567	19,730
Delaware & Hudson	Oct.	881	3,866,204	267,387	4,384,254	503,923	1,034,176	60,108	1,345,225	146,506	3,112,275	71.0	1,271,979	1,064,318	1,111,861	—76,680
	10 mos.	881	33,048,786	3,189,289	38,434,144	4,273,226	9,279,822	512,907	12,664,183	1,413,238	28,324,872	73.7	10,109,272	8,999,593	8,950,865	6,911,742
Delaware, Lackawanna & Western	Oct.	999	6,244,140	1,098,315	8,274,782	670,616	1,382,185	145,979	2,920,353	177,201	5,349,809	64.7	2,924,973	2,169,600	2,244,326	1,156,194
	10 mos.	996	53,884,391	11,180,432	73,620,964	7,159,852	13,640,265	1,316,739	26,969,095	1,760,118	51,400,453	69.8	22,220,511	15,648,574	16,220,973	13,359,341
Denver & Rio Grande Western	Oct.	2,574	2,934,083	329,364	3,503,188	558,234	586,079	55,457	1,077,588	88,214	2,395,015	68.4	1,108,173	888,086	897,473	922,551
	10 mos.	2,563	22,137,591	3,924,243	28,222,233	5,068,293	5,018,525	554,588	8,496,496	873,570	20,410,152	72.3	7,812,081	5,878,136	6,466,477	5,447,133
Denver & Salt Lake	Oct.	255	431,199	15,892	466,921	71,947	136,164	1,286	98,340	6,710	311,473	66.7	155,448	149,445	139,528	93,280
	10 mos.	255	2,912,317	255,953	3,415,119	1,130,523	1,073,421	18,220	786,553	69,897	3,058,878	89.6	356,241	296,222	290,194	383,824
Detroit & Mackinac	Oct.	375	140,433	12,293	169,123	28,050	32,411	1,280	46,369	6,091	113,736	67.3	55,387	45,616	47,804	32,355
	10 mos.	375	1,052,883	200,049	1,388,559	286,631	363,400	19,351	490,913	55,344	1,214,264	87.4	174,295	80,911	145,412	160,875
Detroit & Toledo Shore Line	Oct.	50	413,253	.....	417,140	64,290	37,239	3,273	106,035	7,640	218,477	50.4	198,663	174,282	88,138	135,235
	10 mos.	50	3,862,584	.....	3,899,064	480,703	365,086	33,276	973,645	86,721	1,939,431	49.7	1,959,633	1,721,928	854,613	649,124
Detroit Terminal	Oct.	26	.....	.....	217,716	24,399	13,786	.....	108,770	3,619	150,574	69.2	67,142	52,330	24,416	70,672
	10 mos.	26	.....	.....	2,183,005	331,964	163,873	7	1,100,839	36,438	1,633,121	74.8	549,884	383,069	379,786	651,166
Detroit, Toledo & Ironton	Oct.	485	1,064,061	5,370	1,089,198	214,683	195,921	12,064	323,045	31,947	775,732	71.2	313,466	257,767	131,834	486,332
	10 mos.	487	10,878,816	85,384	11,123,066	1,796,123	2,041,145	110,300	3,145,022	332,949	7,376,522	66.3	3,746,544	3,095,100	1,984,234	2,916,328
Duluth & Iron Range	Oct.	275	887,334	5,532	1,015,180	82,925	107,943	968	219,350	22,889	433,603	42.7	581,577	491,370	500,589	321,248
	10 mos.	275	5,793,592	61,456	6,671,961	939,611	1,086,880	14,637	1,676,012	209,646	3,928,496	58.9	2,743,465	2,303,611	2,338,383	1,946,010
Duluth, Messabe & Northern	Oct.	306	2,444,579	5,219	2,778,341	180,568	193,217	2,911	423,046	27,485	827,932	29.8	1,950,409	1,703,942	1,701,141	999,863
	10 mos.	306	15,564,850	59,282	17,697,407	1,833,634	1,976,157	29,258	2,966,552	257,896	7,068,447	39.9	10,628,960	8,759,881	8,698,836	8,255,717
Duluth, Winnipeg & Pacific	Oct.	178	178,362	18,367	203,612	42,100	57,636	4,321	85,568	7,277	198,576	97.5	5,036	—4,564	—8,119	377
	10 mos.	178	1,728,679	165,996	1,977,150	394,933	525,559	43,338	688,229	88,261	1,754,029	88.7	223,121	125,016	171,981	223,650
Elgin, Joliet & Eastern	Oct.	460	2,077,989	87	2,247,511	232,402	431,886	13,983	705,169	46,161	1,428,436	63.6	819,075	680,563	514,694	352,924
	10 mos.	459	20,445,131	263	22,275,784	1,969,409	4,624,345	137,996	7,146,719	461,158	14,336,157	64.4	7,939,627	6,836,040	5,100,156	3,543,185
Erie Railroad	Oct.	2,053	8,967,583	934,193	10,753,237	1,640,827	2,490,813	154,590	4,051,843	286,776	8,067,984	75.0	2,685,253	2,212,075	2,255,400	1,378,663
	10 mos.	2,053	74,016,229	10,337,986	92,031,825	10,982,415	22,626,479	1,428,811	35,767,834	2,906,156	75,178,207	81.7	16,853,618	13,093,782	13,662,408	13,900,628
Chicago & Erie	Oct.	269	1,381,543	52,500	1,555,755	128,947	168,047	23,392	430,870	40,704	790,472	50.8	765,293	773,086	368,476	99,662
	10 mos.	269	10,905,271	593,408	12,511,382	1,340,740	1,415,676	235,423	3,858,473	408,721	7,256,111	58.0	5,255,271	4,688,114	1,335,078	1,333,267
New Jersey & New York	Oct.	45	31,035	97,402	134,818	17,520	21,918	1,922	74,917	3,881	120,158	89.1	14,660	11,018	—22,764	—19,310
	10 mos.	45	286,571	996,499	1,339,838	164,167	220,100	15,407	702,139	42,614	1,144,341	85.4	195,497	157,888	—165,507	—154,116
N. Y., Susquehanna & Western	Oct.	135	364,834	47,941	455,424	54,351	83,188	4,576	191,388	12,270	346,272	76.0	109,152	79,912	66,649	—30,013
	10 mos.	135	3,160,460	519,799	4,149,025	546,838	687,450	43,848	1,914,707	122,592	3,315,334	79.9	833,691	541,021	420,117	477,937

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1926—CONTINUED

Name of road	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rents.	Net after rents, 1925.
Evansville, Indianap's & Terre Haute.Oct.	146	$218,829	$4,681	$230,070	$35,493	$37,035	$1,923	$73,888	$5,522	$153,901	66.9	$76,169	$68,932	$23,406	$37,024
10 mos.	146	1,993,644	52,736	2,114,193	301,090	317,272	19,920	705,445	65,402	1,407,825	66.6	706,368	645,631	263,364	311,147
Florida East Coast.....Oct.	849	1,192,128	534,673	1,960,296	402,190	328,398	45,908	670,228	56,382	1,467,428	74.9	492,868	351,909	252,681	518,570
10 mos.	849	14,331,061	7,638,114	24,794,015	3,935,547	3,634,139	317,181	9,151,596	580,832	17,040,439	68.7	7,753,576	6,400,687	4,387,508	4,713,951
Fort Smith & Western.....Oct.	249	167,344	15,275	191,769	34,488	28,329	5,626	53,412	8,062	129,727	67.6	62,042	56,517	42,105	68,357
10 mos.	249	1,197,027	140,422	1,416,645	283,405	272,055	55,915	478,246	75,320	1,162,550	82.1	254,095	198,660	56,888	208,212
Galveston Wharf .....Oct.	13	.....	.....	214,629	41,425	4,063	1,429	55,979	3,412	122,718	57.2	91,911	67,311	67,107	32,713
10 mos.	13	.....	.....	1,540,274	427,195	48,640	13,799	557,758	31,205	1,004,502	65.2	535,772	335,328	334,862	143,728
Georgia R. R.....Oct.	328	423,812	76,315	538,129	55,887	90,043	24,359	210,192	20,556	401,338	74.6	136,791	120,655	112,239	45,928
10 mos.	328	3,993,225	842,553	5,162,040	573,057	978,003	225,477	2,084,579	218,425	4,081,517	79.1	1,080,523	955,624	940,745	838,838
Georgia & Florida.....Oct.	406	144,236	22,544	176,699	35,690	22,915	9,669	58,385	9,411	136,292	77.1	40,407	33,318	15,018	35,971
10 mos.	406	1,362,652	219,321	1,677,722	238,604	193,665	86,709	608,242	82,428	1,211,879	72.2	465,843	395,419	203,575	192,861
Grand Trunk Western.....Oct.	347	1,741,503	174,466	2,012,286	312,992	390,462	37,880	613,724	63,868	1,430,311	71.1	581,975	483,680	306,590	208,759
10 mos.	347	14,638,007	1,912,576	17,380,525	2,102,445	3,785,442	381,661	5,745,239	583,735	12,695,842	73.0	4,684,683	3,675,599	2,544,086	1,451,465
Atlantic & St. Lawrence.....Oct.	166	152,027	24,001	195,255	28,724	34,689	5,770	89,963	7,712	179,011	89.8	20,244	6,562	—44,000	—111,269
10 mos.	166	11,656,399	333,743	2,179,936	405,961	336,411	55,966	1,041,846	85,166	1,939,469	88.9	240,467	103,840	—497,795	—797,622
Chic., Det. & Canada Gr. Tr. Jct..Oct.	59	307,911	1,203	359,969	43,051	21,486	4,191	108,090	4,617	181,417	50.4	178,552	151,593	108,926	136,100
10 mos.	59	2,745,166	26,281	3,232,552	388,365	179,989	41,400	1,002,554	41,060	1,651,707	51.1	1,580,855	1,427,402	1,053,083	882,431
Det., Grand Haven & Milwaukee....Oct.	189	761,745	27,408	851,627	104,336	62,948	11,299	285,313	15,978	480,559	56.4	371,068	355,005	241,720	174,833
10 mos.	189	5,818,773	348,695	6,721,772	618,865	554,923	119,628	2,596,321	157,238	4,041,745	60.1	2,680,027	2,589,344	1,514,875	919,160
Great Northern .....Oct.	8,181	12,417,733	1,011,487	14,502,091	1,122,749	1,397,827	188,964	3,886,593	209,587	6,876,550	47.4	7,626,541	6,689,266	6,124,043	5,564,800
10 mos.	8,192	77,069,012	10,775,799	97,054,170	12,468,084	15,099,120	2,179,685	30,687,888	2,190,136	63,204,745	65.1	33,849,425	25,812,787	24,888,197	21,975,119
Green Bay & Western.....Oct.	234	139,654	4,197	152,263	26,256	29,242	4,474	51,202	3,662	114,836	75.4	37,426	27,426	24,863	54,669
10 mos.	234	1,240,105	65,720	1,362,338	255,331	243,456	46,889	473,972	29,280	1,048,801	76.9	313,537	216,396	204,817	203,815
Gulf & Ship Island.....Oct.	307	288,134	37,636	353,752	109,681	53,868	5,531	128,065	7,503	367,197	103.8	—13,445	—37,554	—53,179	—43,910
10 mos.	307	2,667,801	453,568	3,368,609	1,735,615	667,662	51,406	1,290,172	70,691	3,835,840	113.9	—467,231	—722,929	—894,284	349,854
Gulf, Mobile & Northern.....Oct.	611	581,929	29,682	637,256	94,228	89,945	26,867	158,936	23,665	393,871	61.8	243,385	188,479	167,001	161,342
10 mos.	509	4,799,835	311,439	5,330,005	853,485	808,616	252,526	1,460,022	230,238	3,606,519	67.6	1,723,486	1,264,148	1,191,906	1,146,960
Hocking Valley.....Oct.	348	1,447,909	63,810	1,689,569	242,742	418,940	14,714	457,932	40,794	1,175,111	69.6	514,458	401,222	395,681	338,878
10 mos.	348	14,227,504	648,650	16,505,929	1,982,814	4,179,671	152,099	4,714,953	408,708	11,436,188	69.3	5,069,741	3,923,060	3,674,856	2,797,210
Illinois Central .....Oct.	4,874	12,137,872	1,884,370	15,035,731	2,323,017	3,308,794	252,758	4,804,663	337,796	11,096,236	73.8	3,939,445	2,926,247	2,800,274	2,651,130
10 mos.	4,874	101,940,315	20,117,316	131,612,959	18,931,581	30,216,641	2,473,340	45,394,637	3,335,745	100,230,968	76.7	30,681,991	21,900,360	21,772,637	20,247,902
Yazoo & Mississippi Valley.....Oct.	1,710	2,526,979	366,665	3,109,277	596,487	488,306	51,199	982,195	75,112	2,194,545	70.6	914,732	663,634	581,458	558,945
10 mos.	1,545	18,100,152	3,241,416	22,685,962	4,215,387	4,091,185	414,710	8,032,603	661,692	17,407,907	76.7	5,277,995	3,575,619	2,886,501	3,937,878
Illinois Central System.....Oct.	6,584	14,654,214	2,252,658	18,138,871	2,919,591	3,796,912	303,862	5,789,616	414,182	13,206,345	73.3	4,842,526	3,506,121	3,297,162	3,401,837
10 mos.	6,585	122,359,914	23,886,947	157,376,347	23,731,251	35,019,821	3,007,529	54,628,612	4,220,568	121,195,743	77.0	36,180,604	25,332,440	24,459,460	25,341,320
Kansas City, Mexico & Orient.....Oct.	272	194,193	8,161	212,374	47,643	83,788	7,031	66,252	8,071	213,621	100.1	—247	—10,559	4,582	3,167
10 mos.	272	1,703,100	76,882	1,872,903	598,370	504,316	68,602	676,810	72,069	1,918,994	102.5	—46,091	—109,055	45,550	401
Kans. City, Mex. & Orient of Texas.Oct.	465	363,967	22,123	402,553	87,300	112,699	7,675	124,710	8,122	340,387	84.6	62,166	53,773	5,522	11,400
10 mos.	465	3,014,462	174,283	3,309,183	935,337	692,666	78,543	980,770	73,060	2,759,659	83.4	549,524	477,708	65,131	263,587
Kansas City Southern.....Oct.	784	1,367,832	111,511	1,646,154	200,262	273,708	50,819	495,114	83,576	1,100,836	66.9	545,318	438,480	392,525	421,627
10 mos.	784	13,140,653	1,247,746	15,935,494	1,816,555	2,710,624	507,666	4,966,564	786,230	10,765,307	67.6	5,170,187	4,094,264	3,622,178	3,090,971
Texarkana & Ft. Smith.....Oct.	81	193,014	11,066	222,826	22,915	21,548	6,661	67,586	10,305	130,941	58.8	91,885	75,225	48,323	68,814
10 mos.	81	2,195,949	110,270	2,489,280	227,579	234,405	61,952	689,336	104,368	1,330,540	53.5	1,158,740	988,296	673,746	645,205
Kansas, Oklahoma & Gulf.....Oct.	318	235,152	5,436	245,916	88,332	20,798	10,397	67,889	7,029	193,661	78.7	52,315	42,738	24,831	32,559
10 mos.	315	1,998,601	53,399	2,166,108	766,776	529,740	95,972	703,851	148,781	2,245,615	106.6	—139,507	—260,288	—422,060	—56,916
Lake Superior & Ishpeming.....Oct.	160	286,038	1,804	331,432	39,322	24,937	1,450	68,953	4,894	139,556	42.1	191,876	156,443	155,674	147,108
10 mos.	160	1,910,428	32,275	2,220,259	394,773	239,415	5,989	531,917	49,859	1,221,741	55.0	998,518	762,496	736,770	610,673
Lake Terminal .....Oct.	13	.....	.....	96,060	15,214	18,396	.....	55,339	1,697	91,546	95.4	4,414	—1,753	—11,306	4,393
10 mos.	13	.....	.....	993,523	135,570	178,992	.....	548,335	17,734	880,631	88.6	112,892	51,401	28,656	44,633
Lehigh & Hudson River.....Oct.	96	334,810	1,775	347,906	53,035	45,550	1,864	108,889	11,285	220,623	63.4	127,283	107,733	80,762	14,245
10 mos.	96	2,645,657	21,811	2,844,624	309,985	369,503	18,878	1,007,903	125,354	1,831,617	64.4	1,013,007	843,227	593,208	369,136
Lehigh & New England.....Oct.	219	577,957	1,146	590,526	51,086	92,444	5,000	164,048	15,555	333,099	56.4	257,427	220,999	216,503	80,984
10 mos.	219	4,638,322	12,941	4,732,183	484,871	965,298	52,202	1,410,799	142,980	3,051,280	64.5	1,680,903	1,425,156	1,450,793	1,127,024
Lehigh Valley .....Oct.	1,363	6,494,518	601,059	7,590,068	773,084	1,594,199	134,756	2,747,769	140,944	5,424,653	71.5	2,165,415	1,748,737	1,651,135	686,261
10 mos.	1,363	55,696,353	6,704,103	67,037,220	7,540,953	14,178,173	1,302,031	25,391,556	1,390,172	50,144,782	74.8	16,892,438	13,225,964	12,110,281	11,538,672
Louisiana & Arkansas.....Oct.	302	416,143	16,758	444,693	53,083	56,498	56,458	12,655	113,366	11,300	55.7	197,080	160,517	135,913	63,199
10 mos.	302	3,309,646	184,848	3,593,245	530,727	572,398	115,266	1,005,992	116,465	2,336,375	65.0	1,256,870	913,999	745,052	711,294
Louisiana Ry. & Nav. Co.....Oct.	337	338,972	19,241	375,186	65,061	53,650	11,498	142,034	10,325	281,158	74.9	94,028	72,010	23,159	—2,762
10 mos.	337	2,789,128	187,801	3,143,555	582,831	476,580	116,291	1,338,166	101,871	2,573,335	81.8	570,220	348,484	—10,522	18,690

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1926—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rents.	Net after rents, 1925.
			Freight.	Passenger.	Total (inc. misc.)	Maintenance of—Way and structures.	Maintenance of—Equipment.	Traffic.	Transportation	General.	Total.					
Louisiana Ry. & Nav. Co. of Texas.	Oct.	206	$109,418	$6,201	$121,138	$12,670	$18,631	$2,982	$47,266	$6,319	$94,852	78.3	$26,286	$22,285	$6,091	$27,323
	10 mos.	206	978,800	60 634	1,092,030	203,635	164,849	31,228	494,670	59,975	954,044	87.4	157,986	97,618	—90,795	—33,911
Louisville & Nashville	Oct.	5,038	10,490,228	1,783,513	13,023,367	1,976,917	2,830,196	249,908	4,172,867	305,189	9,584,626	73.6	3,438,741	2,608,450	2,704,538	2,985,695
	10 mos.	5,038	97,333,603	18,630,980	122,765,957	17,662,938	27,331,467	2,456,743	42,041,921	2,955,265	92,825,744	75.6	29,940,213	23,260,618	23,518,531	22,156,564
Louisville, Henderson & St. Louis	Oct.	199	250,003	52,789	320,513	58,947	36,899	7,667	99,684	10,771	213,968	66.8	106,545	83,111	77,526	101,933
	10 mos.	199	2,427,808	535,380	3,131,757	696,445	461,899	75,676	1,028,419	105,114	2,367,553	75.6	764,204	575,109	510,084	672,340
Maine Central	Oct.	1,121	1,482,793	267,717	1,896,910	205,065	252,399	14,829	681,861	50,108	1,302,502	68.7	594,408	489,916	466,018	320,791
	10 mos.	1,121	12,199,044	3,320,889	17,082,559	2,622,554	3,249,521	143,535	6,768,650	505,887	13,308,156	77.9	3,774,403	2,766,091	2,655,260	2,581,746
Midland Valley	Oct.	364	339,773	36,787	390,267	71,807	39,582	7,415	97,903	19,515	233,459	59.8	156,808	134,374	116,597	120,550
	10 mos.	364	3 151,151	313,432	3,591,341	600,937	376,318	55,707	894,742	193,512	2,120,133	59.0	1,471,208	1,279,378	1,103,022	999,849
Minneapolis & St. Louis	Oct.	1,627	1,326,657	77,126	1,475,444	207,612	267,165	35,132	587,317	42,860	1,137,223	77.1	338,221	275,703	218,634	211,025
	10 mos.	1,627	10,685,819	931,413	12,279,097	2,172,332	2,715,610	259,412	5,457,585	432,032	11,129,189	90.6	1,149,908	525,969	174,536	40,452
Minneapolis, St. Paul & S. S. Marie.	Oct.	4,400	3,612,943	408,244	4,387,392	549,620	738,743	70,755	1,533,617	107 727	3,011,771	68.6	1,375,621	1,130,932	957,641	1,274,526
	10 mos.	4,400	30,691,241	5,105,111	39,196,822	5,639,665	7,514,904	741.180	14,804,300	1,150,000	30,063,372	76.7	9,133,450	6,733,820	5,641,197	7,150,780
Duluth, South Shore & Atlantic	Oct.	590	364,304	64,826	483,024	72,077	63,336	7,387	188,183	11,663	346,921	71.8	136.105	107,103	94,743	87,469
	10 mos.	590	3,326,580	751,603	4,502,508	824,718	772,248	73,034	1,579,698	114,676	3,707,313	82.3	795,195	505,195	338,463	562,084
Spokane International	Oct.	165	94,385	11,443	113,173	19,759	8,901	3,381	34,233	6,204	73,468	64.9	39,705	33,788	24,568	23,474
	10 mos.	165	877,325	115,518	1,060,617	165,119	82,713	34,277	324,504	63,361	680,602	64.2	380,015	325,151	245,513	209,289
Mississippi Central	Oct.	161	141.855	11,578	158,732	20,561	26,837	9,198	38,671	7,719	102,986	64.9	55,746	42,530	46,819	36,071
	10 mos.	161	1,238,172	108,496	1,393,037	204,431	256,633	81,269	370,817	82,944	996,079	71.5	396,958	293,248	355,074	364,094
Missouri & North Arkansas	Oct.	364	137,874	17,456	165,512	49,605	20,531	11,435	58,805	7,496	147,872	89.5	17,640	15,273	1,180	4,289
	10 mos.	364	1,199,992	168,183	459,656	482,820	249,145	90,184	558,888	79,752	1,460,792	100.1	—1,136	—24,587	—146,215	—10,916
Missouri-Kansas-Texas	Oct.	1,799	2 598,289	365,964	3,230,136	480,522	737,427	62,983	785,855	105,793	2,181,709	67.5	1,048,427	762,912	781,657	863,042
	10 mos.	1,799	23,406,277	3,791,815	29,297,201	3,452,330	7,191,164	622,755	7,433,126	946,522	19,665,924	67.1	9,631,277	7,252,416	7,627,806	8,814,065
Missouri-Kansas-Texas of Texas.	Oct.	1,389	1,813,338	361,025	2,366,428	321,608	244,223	48,912	772,856	66,449	1,453,526	61.4	912,902	858,973	667,997	553,294
	10 mos	1,389	13,366,382	3,403,352	18,210,689	2,916,804	2,336,503	461,398	6,995,060	654,721	13,367,130	73.4	4,843,559	4,307,023	2,550,834	1,396,810
Missouri Pacific	Oct.	7,347	10.437,551	1,365,011	12,712,588	2,076,370	2,330,911	323,809	4,261,509	341,513	9,355,997	73.6	3,356,591	2,858,184	2,330,150	2,110,433
	10 mos.	7,346	89,667,453	13,457,295	111,464,381	17,685,431	22,454,910	2,861,561	39,129,334	3,324,451	85,524,097	76.7	25,940,284	21,308,851	16,895,277	14,549,788
Gulf Coast Lines	Oct.	922	1,104,314	191,499	1,371,629	270,115	236,027	43,009	394,040	60,675	1,008,344	73.5	363,285	297,916	256,231	244,837
	10 mos.	922	11,176,045	1,870 222	13,820,806	2,365,477	2,269,675	388,402	3,854,362	545,705	9,386,591	67.9	4,434,215	3,781,044	3 129,241	3,551,370
San Antonio, Uvalde & Gulf	Oct.	318	125,025	23,456	159,276	29,668	41,356	4,597	38,993	5,919	120,383	75.6	38,893	35,063	18,826	11,921
	10 mos.	318	1,279,202	219,472	1,611,960	298,359	232,773	37,834	524,683	58,735	1,152,107	71.5	459,853	423,117	245,936	152,364
International-Great Northern	Oct.	1,159	1,730,773	192,090	2,099,603	318,434	349.856	29,695	682,915	64,296	1,442,450	68.2	657,153	602,805	482,986	392,615
	10 mos.	1,159	12,249,697	1,993,631	15,599,256	2,768,822	2,624,909	332,436	5,934,761	594,850	12,194,316	78.1	3,404,940	2,940,806	2,110,760	1,844,334
Texas & Pacific	Oct.	1,954	2,646,532	510,870	3,397,054	441,601	576.431	81,592	1,072,733	102,458	2,287,097	67.3	1,109,957	946,532	899,838	886,394
	10 mos.	1,953	21,616,245	5,037,876	28,865,168	4,442,443	5,407.332	704,438	10,179,131	990,422	21,793,352	75.5	7,071,816	5,480,616	4,756,629	4,597,963
Mobile & Ohio	Oct.	1,161	1,504,798	117,878	1,718,258	244,307	277,382	53,945	570.418	48.219	1,193,471	69.5	524,787	395,371	360,108	440,836
	10 mos.	1,161	14,202,563	1,188,683	16,205,715	2,361,808	2,953,655	522,108	5,519.002	462,066	11,816,143	72.9	4,389,572	3,324,357	2,905 222	3,094,633
Monongahela	Oct.	130	601,233	20,748	628.304	72,500	65,000	951	159,737	10,032	306,523	48.8	321,781	286,243	203,580	219,888
	10 mos.	130	5,174,543	215,271	5,456,030	645,000	650,000	19,551	1,470,918	100,322	2,861,969	52.5	2,594,061	2,319,487	1,565,992	1,386,769
Monongahela Connecting	Oct.	7	.....	.....	213,137	30,819	32,064	375	88,656	3,283	155,197	72.8	57,940	46,450	41,396	24,737
	10 mos.	7	.....	.....	1,909,961	198,183	348,053	3,767	836,612	32,371	1,418,986	74.3	490,975	410,568	389,326	208,585
Montour	Oct.	57	127,726	86	129,400	27,559	57,572	1,166	21,243	6,567	114,108	88.2	15,292	9,306	42,667	20,914
	10 mos.	57	884,293	2,593	894,464	217,277	466,092	12,252	172,907	67,529	936,917	104.6	—41,553	—81,463	246,498	217,117
Nashville, Chattanooga & St. Louis	Oct.	1,259	1,606,332	344,934	2,099,909	257,756	432,597	68,054	717,261	77 643	1,556,664	74.1	543,245	432,993	473,726	523,116
	10 mos.	1,259	14,876,016	3,812,800	20,100,178	2,999,825	4,196,593	784,821	7,120,048	759,487	15,899,984	79.1	4,200,194	3,308,395	3,318,688	3,092,950
Nevada Northern	Oct.	165	82,816	7,646	97,820	17,257	6,857	873	16,247	3,900	45,293	46.3	52,527	39,968	38,979	40,125
	10 mos.	165	649,319	78,531	797.153	124,481	60,028	8,871	146,990	46.315	388,410	48.7	408,743	300,185	397,386	283,127
Newburgh & South Shore	Oct.	7	.....	.....	168,061	16,583	32.649	.....	64,114	4,866	118,217	70.3	49,844	37,204	30,753	44,906
	10 mos.	7	.....	.....	1,664,499	190,788	385.153	.....	678,934	43,540	1,298,415	77.1	386,084	252,357	280,909	276,447
New Orleans Great Northern	Oct.	274	242,991	28,100	280,889	42,382	62,444	8,037	77 228	11,399	201,812	71.8	79,077	64,161	52,441	67,206
	10 mos.	274	2,282,540	281,615	2,643,536	343,711	543,682	72,477	753,232	111,035	1,826,847	69.1	816,689	631,940	495,297	451,535
New York Central	Oct.	6,930	22,618,283	7,525,263	34,903,683	5,432,808	7,344,923	427,807	12,116,487	1,077,511	26,845,904	76.9	8,057,779	5,871,201	5,900,162	6,272,003
	10 mos.	6,930	206,041,264	83,568,380	332,082,801	44,763,106	70,331,427	4,059,537	110,837,652	11,939,568	246,485,158	74.2	85,597,643	62,701,273	61,172,875	58,190,294
Cincinnati Northern	Oct.	244	408,710	5,162	425,324	45,811	66,462	5,661	128.185	10,027	256,105	60.2	169,219	137,917	119,424	116,168
	10 mos.	244	3,836,876	69,873	3,995,334	458,589	704,478	57,962	1,263,298	120,234	2,598,975	65.1	1,396,359	1,130,847	861,167	850,179
Cleve., Cin., Chicago & St. Louis.	Oct.	2,396	6,424,031	1,314,337	8,449,114	1,104,507	1,719,670	143,554	2,886,050	239,726	6,168,723	73.0	2,280,391	1,784,769	1,752,760	1,778,919
	10 mos.	2,396	58,608,345	13,593,505	78,736,320	9,351,690	16,598,267	1,364,380	27,625,522	2,711.245	58,391,835	74.2	20,344,485	15,713,105	15,168,914	15,047,455
Indiana Harbor Belt	Oct.	116	.....	... ...	1,087,399	185,577	151,143	4,842	416,278	25,227	780,839	71.8	306,560	263,006	163,782	249,725
	10 mos.	116	.....	.....	9,476,992	1,239,686	1,243,699	47,866	3,865,025	283,075	6,672,703	70.4	2,804,289	2,336,354	1,714,703	1,643,591

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1926—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues			Operating expenses					Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rents.	Net after rents, 1925.
			Freight.	Passenger.	Total (inc. misc.)	Maintenance of—Way and structures.	Maintenance of—Equipment.	Traffic.	Transportation.	General.	Total.					
Michigan Central	Oct.	1,871	$5,663,166	$1,727,872	$8,313,235	$1,203,634	$1,657,441	$113,242	$2,560,412	$201,134	$5,827,299	70.1	$2,485,936	$1,954,248	$1,911,181	$2,227,660
	10 mos.	1,871	55,030,206	18,165,077	81,066,251	9,884,965	15,387,825	1,124,224	25,118,086	2,592,247	54,943,528	67.8	26,122,723	20,921,219	19,941,521	20,025,566
Pittsburgh & Lake Erie	Oct.	231	2,778,831	240,918	3,117,824	412,038	1,003,426	14,878	958,978	90,195	2,482,500	79.6	635,324	432,509	822,418	728,944
	10 mos.	231	24,660,704	2,447,834	28,079,617	3,820,495	8,866,819	235,266	8,752,976	846,645	22,542,602	80.3	5,537,015	3,691,236	7,462,232	7,062,942
New York, Chicago & St. Louis	Oct.	1,691	4,724,646	155,641	5,053,665	670,409	939,417	126,449	1,658,572	159,137	3,552,151	70.3	1,501,514	1,310,594	1,247,195	1,208,804
	10 mos.	1,691	42,826,397	1,639,457	46,001,150	6,065,535	8,907,846	1,241,990	15,578,219	1,634,756	33,592,197	72.6	12,608,953	10,099,788	8,610,458	9,050,677
New York, New Haven & Hartford	Oct.	1,915	6,441,579	4,106,837	12,002,057	1,433,593	2,478,455	81,870	3,885,327	284,627	8,347,951	69.6	3,654,106	3,201,123	2,486,198	2,284,689
	10 mos.	1,918	57,535,665	41,710,901	111,937,333	14,915,790	23,466,158	798,308	38,208,066	2,991,042	82,123,576	73.4	29,813,757	25,287,049	19,765,438	19,098,177
Central New England	Oct.	271	758,293	5,924	781,214	139,544	69,260	6,986	210,668	15,950	442,204	56.6	339,010	313,224	268,513	2,710
	10 mos.	276	6,236,856	37,588	6,450,046	1,139,075	1,043,062	68,438	2,078,024	168,315	4,496,710	69.7	1,953,336	1,694,494	1,305,708	1,031,982
New York Connecting	Oct.	20	296,081	.....	341,515	42,136	14,270	.....	56,968	1,362	114,736	33.6	226,779	188,779	182,082	38,283
	10 mos.	20	2,164,229	.....	2,480,674	355,148	133,202	.....	532,457	14,958	1,035,765	41.8	1,444,909	1,060,909	1,032,781	981,964
New York, Ontario & Western	Oct.	569	930,044	81,044	1,192,480	197,462	245,400	17,440	479,098	33,063	975,326	81.8	217,154	162,708	122,623	—100,225
	10 mos.	569	7,699,876	2,468,313	12,028,658	1,616,727	2,270,067	164,839	4,744,399	338,747	9,158,180	76.1	2,870,478	2,358,998	1,823,631	1,460,112
Norfolk & Western	Oct.	2,241	10,100,419	604,267	11,051,990	1,485,479	1,782,067	101,822	2,681,167	187,741	6,195,801	56.1	4,856,189	3,754,900	3,938,988	3,460,124
	10 mos.	2,241	88,584,383	6,412,588	98,303,083	13,621,507	17,530,459	1,079,375	24,672,598	1,883,699	58,563,687	59.6	39,739,396	30,953,179	33,368,502	25,469,340
Norfolk Southern	Oct.	931	819,370	60,541	936,430	120,668	179,982	23,718	306,044	29,717	644,254	68.8	292,176	226,779	189,746	195,059
	10 mos.	931	7,196,554	732,468	8,378,145	1,081,183	1,342,834	238,110	3,049,497	283,618	5,883,099	70.2	2,495,046	1,949,893	1,553,491	1,163,322
Northern Pacific	Oct.	6,682	8,583,382	911,828	10,291,216	880,459	1,521,182	169,553	2,977,621	244,067	5,853,185	56.9	4,438,031	3,339,379	3,714,655	4,094,711
	10 mos.	6,682	63,721,986	10,611,503	81,353,906	10,968,677	14,641,539	2,065,450	26,876,816	2,395,962	57,719,097	71.0	23,634,809	15,826,443	19,314,329	16,684,295
Northwestern Pacific	Oct.	477	395,828	144,389	593,797	114,527	84,154	7,147	226,397	17,764	449,894	75.8	143,903	103,039	87,327	177,792
	10 mos.	484	3,816,335	1,731,311	6,082,116	987,185	821,854	65,696	2,236,491	180,760	4,290,017	70.5	1,792,093	1,382,327	1,252,421	1,109,912
Pennsylvania R. R.	Oct.	10,517	47,794,773	13,024,140	67,051,899	7,862,659	14,037,184	816,232	23,190,219	1,560,070	48,221,355	71.9	18,830,544	15,036,032	13,709,437	12,592,143
	10 mos.	10,517	411,528,904	123,936,157	588,442,779	75,728,432	134,457,696	7,284,623	212,084,380	15,508,025	452,473,916	76.9	135,968,863	103,557,294	90,787,099	83,704,788
Baltimore, Chesapeake & Atlantic	Oct.	130	92,744	29,528	133,779	13,083	18,575	1,723	81,030	3,070	117,481	87.8	16,298	16,298	16,782	29,653
	10 mos.	130	791,458	351,667	1,219,357	133,726	314,782	20,550	785,399	33,403	1,287,860	105.6	—68,503	—118,721	—118,506	—38,630
Long Island	Oct.	397	1,140,599	1,975,792	3,353,909	460,401	536,841	39,786	1,363,539	85,323	2,492,279	74.3	861,630	704,300	478,163	227,562
	10 mos.	397	9,691,532	21,482,240	33,409,213	4,180,654	5,124,101	320,863	13,329,862	797,911	23,834,062	71.3	9,575,151	7,888,365	5,580,925	6,092,026
West Jersey & Seashore	Oct.	378	529,327	437,892	1,025,123	163,311	183,258	26,457	497,042	30,838	901,908	88.0	123,215	107,772	76,417	—101,591
	10 mos.	378	4,341,686	6,432,282	11,258,733	1,931,563	1,664,473	206,696	4,883,898	287,292	8,982,567	79.8	2,276,166	1,347,951	1,141,618	1,288,556
Peoria & Pekin Union	Oct.	19	29,380	3,912	161,199	23,493	14,938	1,538	66,479	7,150	113,598	70.5	47,601	29,601	49,578	26,447
	10 mos.	19	230,163	24,359	1,451,756	185,117	141,225	9,333	610,442	80,021	1,026,138	70.7	425,618	243,618	498,644	405,156
Pere Marquette	Oct.	2,243	4,002,611	230,631	4,512,217	412,283	802,577	57,244	1,390,692	101,655	2,766,584	61.3	1,745,633	1,544,625	1,312,995	1,260,941
	10 mos.	2,247	32,676,239	3,313,981	38,469,805	4,182,161	7,766,169	551,967	12,777,079	1,122,923	26,438,337	68.7	12,031,468	9,984,922	8,521,128	7,023,492
Pittsburgh & Shawmut	Oct.	102	142,100	2,165	147,113	18,784	42,639	1,414	40,756	7,011	110,604	75.2	36,509	36,206	43,650	42,056
	10 mos.	102	1,325,431	34,207	1,383,568	187,298	423,038	13,829	376,871	69,197	1,070,233	77.4	313,335	311,168	410,250	243,054
Pittsburgh & West Virginia	Oct.	92	428,012	5,744	466,962	25,152	80,039	7,871	83,142	21,843	230,455	49.4	236,507	165,541	284,210	228,637
	10 mos.	92	3,856,861	57,210	4,258,675	373,295	843,030	80,623	787,560	200,940	2,409,027	56.6	1,849,648	1,269,311	2,201,234	1,743,589
Pittsburgh, Shawmut & Northern	Oct.	198	166,916	2,318	172,637	39,489	29,816	1,605	62,541	5,295	138,746	80.4	33,891	30,920	23,476	34,383
	10 mos.	206	1,563,793	28,285	1,626,851	310,609	333,294	16,815	589,759	56,211	1,306,688	80.3	320,163	290,013	195,955	187,242
Quincy, Omaha & Kansas City	Oct.	249	57,692	14,539	81,721	25,125	8,071	746	30,681	2,642	67,256	82.3	14,465	9,715	6,579	—18,668
	10 mos.	250	547,256	151,996	779,798	306,407	133,110	8,251	333,440	25,751	805,726	103.3	—25,928	—73,723	—103,868	—141,706
Reading	Oct.	1,138	7,932,768	888,730	9,283,311	1,137,070	1,809,912	76,615	2,999,778	183,952	6,206,151	66.9	3,077,160	2,644,754	2,793,487	1,560,437
	10 mos.	1,138	69,282,824	8,091,253	81,219,083	11,696,942	17,862,748	784,372	28,326,494	1,833,338	60,489,253	74.5	20,729,830	16,325,310	17,778,148	17,123,925
Atlantic City	Oct.	161	140,964	149,777	314,353	108,258	15,707	5,545	189,045	5,128	323,843	103.0	—9,490	—45,020	—80,041	—87,872
	10 mos.	161	1,360,015	2,625,876	4,210,482	860,000	325,430	73,359	2,034,667	59,860	3,355,605	79.7	854,877	531,934	201,440	383,475
Perkiomen	Oct.	41	125,040	5,545	134,511	13,148	6,000	108	49,473	1,067	69,847	51.9	64,664	58,007	52,134	57,210
	10 mos.	41	1,119,544	54,498	1,208,450	120,166	61,795	1,081	463,277	10,616	657,434	54.4	551,016	480,415	426,914	412,596
Port Reading	Oct.	19	172,555	.....	219,309	71,975	51,380	229	69,936	1,786	195,306	89.1	24,003	7,288	—41,951	27,031
	10 mos.	19	1,539,987	.....	2,014,261	313,728	171,411	2,290	777,534	27,253	1,292,214	64.2	722,047	557,948	—44,745	291,727
Richmond, Fred'ksburg & Potomac	Oct.	117	411,039	343,073	948,402	128,403	178,099	9,095	330,878	33,263	704,730	74.3	243,672	184,434	143,581	169,068
	10 mos.	117	4,992,586	3,894,216	10,809,301	1,086,965	1,782,415	89,074	3,548,506	368,595	7,199,546	66.6	3,609,755	2,862,625	2,352,651	2,652,078
Rutland	Oct.	413	350,746	91,831	585,215	117,347	106,883	10,148	222,019	12,686	470,924	80.5	114,291	81,529	87,767	61,532
	10 mos.	413	3,295,160	1,054,176	5,673,009	1,093,996	1,106,012	102,834	2,180,008	132,677	4,633,484	81.7	1,039,525	733,996	815,536	674,896
St. Louis-San Francisco	Oct.	4,966	6,484,623	1,237,024	8,297,955	1,277,147	1,554,479	110,399	2,489,275	258,529	5,642,499	68.0	2,655,456	2,237,499	2,248,869	2,045,009
	10 mos.	4,974	56,771,793	12,967,686	74,971,112	9,740,291	14,677,490	1,108,902	24,176,887	2,465,101	51,688,003	68.9	23,283,164	19,201,081	19,242,739	18,009,434
Ft. Worth & Rio Grande	Oct.	233	89,056	16,333	116,618	43,580	22,182	3,040	55,506	5,014	129,099	110.7	—12,481	—16,678	—27,015	—4,753
	10 mos.	233	787,556	159,536	1,052,754	297,233	212,623	32,847	535,700	51,769	1,128,895	107.2	—76,141	—117,882	—203,798	—131,417
St. Louis, San Francisco & Texas	Oct.	137	163,474	12,534	182,759	31,327	29,066	5,301	60,867	7,979	134,512	73.6	48,247	45,855	19,662	35,190
	10 mos.	137	1,494,223	123,308	1,678,781	261,006	270,780	51,540	588,139	75,349	1,246,349	74.2	432,432	405,804	157,004	211,168
St. Louis Southwestern	Oct.	940	1,584,325	118,181	1,800,666	260,090	259,389	70,270	412,235	65,346	1,080,722	60.0	719,944	598,586	533,518	379,445
	10 mos.	940	13,116,961	1,163,718	15,064,953	2,272,219	2,692,519	588,630	3,774,611	601,636	10,076,824	66.9	4,988,129	4,249,661	3,481,108	3,194,780
St. Louis Southwestern of Texas	Oct.	807	697,630	63,108	827,847	274,756	119,389	29,568	255,368	34,459	712,768	86.1	115,079	81,064	141,147	156,744
	10 mos.	807	5,079,578	592,540	6,170,259	1,878,134	1,312,782	253,078	2,447,686	328,453	6,217,622	100.8	—47,363	—354,887	217,194	316,401

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1926—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rents.	Net after rents, 1925.
Seaboard Air Line	Oct.	3,928	$4,193,884	$768,094	$5,422,359	$823,978	$777,405	$208,673	$1,976,598	$192,213	$3,977,308	73.4	$1,445,051	$1,192,549	$1,094,902	$1,063,213
	10 mos.	3,928	40,368,686	10,281,545	55,576,939	7,404,366	8,425,144	2,006,677	20,560,316	1,897,777	41,040,651	73.8	14,536,288	11,663,759	9,630,841	8,810,619
Southern Ry.	Oct.	6,797	10,109,241	2,346,000	13,535,623	1,696,758	2,237,119	277,879	4,264,272	348,652	8,914,732	65.9	4,620,891	3,740,672	3,682,575	3,658,005
	10 mos.	6,794	93,659,281	25,592,042	129,448,581	18,044,044	22,428,754	2,555,727	42,704,056	3,323,274	89,918,342	69.5	39,530,239	31,158,364	29,748,598	28,202,324
Alabama Great Southern	Oct.	318	710,835	159,075	930,763	133,982	162,638	21,491	267,212	22,255	614,973	66.1	315,790	241,547	268,664	291,365
	10 mos.	318	6,664,818	1,655,611	8,872,119	1,298,167	1,739,866	213,742	2,640,634	235,956	6,200,058	69.9	2,672,061	2,048,797	2,248,518	2,267,824
Cin., New Orleans & Tex. Pacific	Oct.	338	1,553,758	318,140	1,994,184	393,971	383,589	45,389	539,769	51,620	1,428,719	71.6	565,465	427,638	412,725	770,721
	10 mos.	338	14,930,065	3,578,395	19,657,341	2,925,909	3,673,458	434,327	5,449,016	529,493	13,201,321	67.2	6,456,020	5,188,509	5,133,093	5,865,868
Georgia Southern & Florida	Oct.	401	323,874	125,984	490,757	84,498	93,006	14,366	192,270	12,936	401,380	81.8	89,377	66,444	46,866	66,779
	10 mos.	401	3,852,314	1,547,814	5,796,578	918,941	915,485	168,198	2,200,650	123,788	4,371,011	75.4	1,425,567	1,124,339	755,966	1,118,208
New Orleans & Northeastern	Oct.	207	485,066	79,752	607,763	76,890	92,397	12,337	151,803	13,875	352,277	58.0	255,486	200,558	165,626	153,150
	10 mos.	207	4,092,531	816,220	5,270,480	684,807	810,757	125,775	1,515,300	145,831	3,325,710	63.1	1,944,770	1,357,329	1,050,417	1,155,495
Northern Alabama	Oct.	110	127,727	8,676	140,059	25,796	3,447	1,851	39,830	2,842	73,759	52.7	66,300	62,297	32,220	21,110
	10 mos.	110	1,099,566	86,623	1,214,199	238,480	47,946	20,898	387,184	28,442	722,670	59.5	491,529	434,610	177,153	226,635
Southern Pacific	Oct.	8,832	15,642,630	3,327,598	20,838,186	2,354,053	2,738,695	415,548	6,202,715	611,968	12,633,846	60.6	8,204,340	6,373,778	5,875,878	5,942,989
	10 mos.	8,774	129,070,683	35,200,988	180,424,622	25,377,009	28,651,742	3,600,668	57,726,466	6,024,413	123,546,967	68.5	56,877,655	42,027,323	39,005,429	32,818,323
Atlantic Steamship Lines	Oct.	...	959,970	36,846	1,155,370	16,524	230,679	18,399	693,983	32,746	992,331	85.9	163,039	159,890	161,461	156,807
	10 mos.	...	8,435,470	471,735	10,410,443	168,056	1,897,305	162,071	6,467,376	332,988	9,027,796	86.7	1,382,647	1,298,959	1,368,036	—207,249
Galveston, Harrisb'g & S. Antonio	Oct.	2,104	2,523,134	408,054	3,155,111	375,326	493,567	52,919	1,030,762	110,974	2,092,948	66.3	1,062,163	811,440	677,360	632,617
	10 mos.	2,104	19,025,010	4,439,509	25,224,807	4,299,696	5,021,856	560,186	8,923,454	1,088,423	20,131,137	79.8	5,093,670	3,961,271	3,031,012	2,804,336
Houston & Texas Central	Oct.	900	1,164,333	253,754	1,521,566	173,798	237,403	31,330	425,759	51,008	921,530	60.6	600,036	501,570	445,741	199,946
	10 mos.	898	8,484,733	2,313,089	11,632,343	2,621,600	2,411,318	292,878	3,798,194	496,805	9,032,422	77.6	2,599,921	1,944,437	1,701,656	1,447,411
Houston East & West Texas	Oct.	191	283,965	36,930	338,013	44,241	52,941	3,765	103,771	10,246	214,764	63.5	123,249	109,923	80,675	118,460
	10 mos.	191	2,213,896	367,548	2,713,789	447,850	507,739	40,152	783,789	99,378	1,874,029	69.1	839,760	682,241	518,410	444,308
Louisiana Western	Oct.	207	215,358	75,683	317,259	40,666	47,171	14,325	113,535	20,635	240,308	75.7	76,951	42,849	25,559	100,143
	10 mos.	207	2,161,303	785,823	3,170,069	431,792	628,282	155,683	997,605	203,000	2,456,681	77.5	713,388	459,446	394,363	507,176
Morgan's L. & T. R. R & S. S. Co.	Oct.	400	616,691	115,804	795,243	115,465	145,780	21,847	316,058	36,593	639,832	80.5	155,411	99,830	70,581	53,185
	10 mos.	400	4,799,285	1,274,171	6,639,126	1,551,107	1,572,760	236,557	2,854,498	366,856	6,626,043	99.8	13,083	—509,513	—704,682	—268,110
Texas & New Orleans	Oct.	569	682,683	157,275	902,405	133,132	195,227	15,011	376,803	40,582	763,626	84.6	138,779	107,533	59,092	251,795
	10 mos.	559	6,452,772	1,481,771	8,487,500	1,536,645	1,851,537	160,032	3,139,117	369,260	7,084,225	83.5	1,403,275	1,058,341	701,436	1,400,346
Spokane, Rutland & Seattle	Oct.	554	711,861	101,569	878,924	106,944	107,731	10,944	230,114	22,533	483,304	55.0	395,620	305,363	279,771	306,625
	10 mos.	554	5,449,135	1,163,352	7,229,620	1,078,141	953,516	110,740	2,038,581	219,024	4,459,950	61.7	2,769,670	1,971,966	1,858,487	1,374,395
Tennessee Central	Oct.	296	244,400	27,287	286,681	55,919	43,242	7,853	102,854	11,827	221,604	77.3	65,077	56,530	37,422	40,652
	10 mos.	296	2,294,834	306,822	2,746,734	564,474	433,768	78,467	969,533	127,535	2,171,005	79.0	575,729	505,738	278,848	357,612
Terminal Railroad Ass'n of St. Louis	Oct.	55	.....	.....	1,284,121	215,287	82,434	1,992	445,187	21,063	769,471	59.9	514,650	391,795	479,537	324,862
	10 mos.	55	.....	.....	11,287,301	1,704,255	924,724	22,917	4,205,217	221,196	7,112,610	63.0	4,174,691	3,036,229	3,913,944	3,281,691
Toledo, Peoria & Western	Oct.	248	139,742	10,464	163,700	42,270	20,609	5,367	67,107	6,974	142,327	86.9	21,373	13,673	6,268	—19,058
	10 mos.	248	961,706	172,764	1,235,191	278,704	261,110	29,417	618,995	67,452	1,255,378	101.6	—20,187	—95,193	—141,525	—227,887
Trinity & Brazos Valley	Oct.	367	291,397	10 705	310,212	84,732	57,019	5,482	114,698	12,090	238,626	76.9	71,586	63,882	30,991	—9,762
	10 mos.	367	1,965,606	100,485	2,131 707	591,122	420,846	47,197	947,770	128,685	2,098,472	98.4	33,235	—43,928	—299,564	—448,855
Ulster & Delaware	Oct.	128	63,879	5,664	101,042	12 724	15,161	1,286	51,067	6,883	87,121	86.2	13,921	8,171	3,420	—4,363
	10 mos.	128	482,273	263,853	1,103,311	184,159	168,043	17,134	533,738	58,584	961,658	87.2	141,653	84,152	41,225	67,041
Union Railroad of Penna	Oct.	45	.....	.....	1,060,942	100,650	279,735	187	427,541	10,415	818,528	77.2	242,414	197,414	253,887	322,691
	10 mos.	45	.....	.....	10,286,714	1,021,137	2,336,636	1,853	4,323,212	108,089	7,790,923	75.7	2,495,791	2,079,384	2,713,309	2,432,935
Union Pacific	Oct.	3,711	10,680,794	1,308,307	12,922,280	1,101,861	2,002,111	164,217	3,062,382	301,315	6,824,300	52.8	6,097,980	5,288,370	4,600,311	5,599,750
	10 mos.	3,693	73,345,042	13,792,351	95,430,807	11,607,639	19,167,516	1,773,469	25,010,616	2,967,268	62,412,252	65.4	33,018,555	25,963,993	23,182,488	23,534,149
Oregon Short Line	Oct.	2,537	3,268,548	334 403	3,849,772	416,799	496,739	43,107	1,044,232	119,045	2,177,628	56.6	1,672,144	1,349,996	1,195,960	1,501,678
	10 mos.	2,523	24,591,607	3,795,846	30,657,348	5,059,025	5,092,607	516,731	8,896,131	1,157,886	21,309,743	69.5	9,347,605	6,746,809	5,873,131	4,741,082
Oregon, Wash. R. R. & Nav. Co.	Oct.	2,237	2,650,924	293,849	3,174,296	350,553	354,752	63,097	1,001,051	116,905	1,911,037	60.2	1,263,259	1,055,948	907,684	365,338
	10 mos.	2,237	20,160,616	3,369,815	25,697,543	4,350,082	3,690,173	732,016	8,724,485	1,161,299	18,908,979	73.6	6,788,564	4,984,500	3,841,418	1,602,960
Los Angeles & Salt Lake	Oct.	1,208	1,590,174	380,304	2,192,809	306,058	323,646	76,118	641,856	73,104	1,503,232	68.6	689,577	559,098	437,054	185,421
	10 mos.	1,208	14,334,221	4,256,631	20,603,894	3,653,996	3,825,889	723,390	6,219,268	747,615	16,024,092	77.8	4,579,802	3,254,934	2,269,978	2,080,471
St. Joseph & Grand Island	Oct.	258	348,231	14,819	381,047	69,040	49,179	3,091	118,807	15,062	256,520	67.3	124,527	100,306	74,759	124,907
	10 mos.	258	2,702,601	162,228	3,050,612	630,833	455,297	30,818	1,011,688	148,406	2,285,286	74.9	765,326	571,990	403,008	438,689
Utah	Oct.	111	151,010	.....	151,108	17,832	30,011	363	28,223	6,197	82,626	54.7	68,482	58,139	54,808	73,160
	10 mos.	111	1,333,310	1,058	1,338,696	206,188	364,350	4,018	282,251	61,053	917,791	68.6	420,905	324,262	298,849	353,247
Virginian	Oct.	545	2,192,308	46,681	2,464,711	211,587	406,982	15,141	469,275	38,029	1,135,785	46.1	1,328,926	1,168,914	1,240,345	777,777
	10 mos.	545	17,297,549	564,938	19,439,255	2,114,349	3,631,384	132,187	4,036,075	330,230	10,208,665	52.5	9,230,590	7,865,900	8,633,727	5,173,490
Wabash	Oct.	2,524	5,409,641	757,329	6,652,166	790,225	1,005,067	159,743	2,224,165	170,292	4,366,929	65.6	2,285,237	1,988,162	1,694,187	1,598,074
	10 mos.	2,524	47,573,459	7,741,986	59,514,722	8,694,770	10,325,940	1,562,829	21,733,435	1,720,346	44,184,940	74.2	15,329,782	12,510,577	9,786,657	9,331,972
Western Maryland	Oct.	804	2,486,924	40,600	2,612,214	313,215	631,365	34,060	713,923	45,527	1,741,195	66.7	871,019	766,019	680,749	453,240
	10 mos.	804	18,785,381	482,950	19,918,855	2,508,737	4,752,852	367,545	5,640,184	438,856	13,792,603	69.2	6,126,252	5,271,252	4,834,722	4,030,148
Western Pacific	Oct.	1,042	1,560,274	150,803	1,875,027	204,856	211,835	39,421	509,223	40,178	1,086,897	58.0	788,130	668,535	671,317	754,364
	10 mos.	1,042	11,073,741	1,682,668	18,836,707	2,000,903	2,117,470	385,137	4,267,263	369,344	9,505,309	69.3	4,741,398	3,170,391	3,857,101	3,518,960
Wheeling & Lake Erie	Oct.	511	1,841,174	34,746	2,023,760	372,999	420,264	33,968	553,537	42,257	1,424,328	70.4	599,432	441,724	474,770	518,779
	10 mos.	511	16,222,698	383,980	17,723,640	2,586,494	4,014,112	321,370	5,054,981	452,795	12,444,821	70.2	5,278,819	3,818,114	3,875,037	3,648,583

General News Department

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"A study of Interstate Commerce Commission records shows for the period of 1907 to 1924 inclusive, a reduction of 81 per cent in the total number of casualties resulting from collisions on steam railroads with an accumulative saving of 87,000 casualties; including the year 1925 these statistics show that in 18 years more than 95,000 casualties—that is, deaths and serious injuries—were averted as a result of the organized accident prevention work of American railroads. In addition to this saving of life and limb it is apparent from recent authoritative statistics that during the last 4 years there has been a financial saving of more than $116,000,000 to the railroads of the country as a result of this reduction of accidents.

"It was brought out at the meeting of the committee of award that in the case of the Duluth, Missabe & Northern not a single passenger or employee had been killed in either train or train service accidents during 1925, despite an exposure of 1,830,000 locomotive miles and 6,000,000 man-hours of work in its shops.

"This railroad has operated during the last 3 years without a single death and without the loss of an arm, hand, eye, leg or foot to any employee or passenger—a truly remarkable record. One of the car repair shops of this road where, approximately, 2000 cars are repaired a month has not had an injury causing the loss of even one day's time in more than 8 years; this despite the fact that the road moved more than 21,000,000 tons of iron ore and other freight during the last year and employed an average of 2700 men during the year."

This year for the first time all the railroads of the country were automatically entered into the competition, the committee of award basing its decision primarily on the accident reports which the roads are required to submit to the Interstate Commerce Commission. The medals are offered annually by Mrs. E. H. Harriman, to stimulate interest in permanently organized activities for the prevention of accidents to employees as well as to passengers on steam railroads.

The Green Bay & Western Railroad, it was reported also had gone through the entire year without a fatality from any cause and with an accidental injury to only one employe and to only 4 other persons in train or train service accidents.

The Harriman Gold Medal has previously been awarded as follows:

1913—Southern Pacific Company.
1914—New York Central Lines.
1915—Cincinnati, New Orleans & Texas Pacific.
1916—Alabama Great Southern.
1925—Union Pacific System.

Canadian Trainmen's Wage Dispute Settled—Details Not Announced

Adjustment of the difficulties between the Canadian railways and the Brotherhood of Railroad Trainmen and the Order of Railroad Conductors was completed in Montreal late last week, and the threatened strike of the employees has been averted.

The employees wanted more money, and when refused the United States rates for men in similar capacities in the United States, took a strike vote, and over 90 per cent of the men voted to authorize their executives to call a strike. Following this decision negotiations were resumed, with Ottawa intervening, and further conferences were held, at which Sir Henry Thornton, president of the Canadian National and E. W. Beatty, president of the Canadian Pacific, met S. N. Berry, senior vice-president of the Order of Railroad Conductors, and W. J. Babe, vice-president of the Brotherhood of Railway Trainmen. The conclusion reached was that increases in part should be granted. The extent of these increases is not disclosed in either statement, one having been issued by E. W. Beatty and Sir Henry Thornton jointly, and the other by the employees' leader. However, both sides make it clear that the increases to be granted are not what were asked, and it is also laid down in the statement by the railway presidents that the principle of acceptance of the United States railroad wage standards is not a matter for acceptance, *ipso facto*, by Canadian roads. In the statement issued by the two presidents, reference is made to anticipated demands of other classes of railway labor.

The manifesto of the men states that their wishes have not been fully met.

Rates of pay in train service in Canada have ben approximately the same as those which prevailed in the United States prior to the adoption on most roads of the so-called "New York Central basis."

Premium Payments Abolished in C. N. R. Shops At Instance of Co-operative Committee

Abolition of the bonus or premium system in all shops of the Canadian National with the payment from December 8 of an increase of two cents per hour to employees thus affected, is announced in a statement made public on December 5 by S. J. Hungerford, vice-president in charge of operation.

The statement follows:

"Following the amalgamation of the various railways now constituting the Canadian National Railways System, there was found, as would naturally be expected, many variations in practice and method. Obviously, uniformity was both necessary and desirable under the new conditions and the management has been progressively studying each of the questions involved with a view to selecting that method which was considered the best available for the particular purpose, or, as an alternative, the development of an entirely new one for adoption throughout the system.

"Among the many variations in practice, it was found that at some of the older repair shops, a so-called premium payment plan had been in vogue, to a greater or less extent for many years, whereby those working under the plan were paid an amount in addition to the regular hourly wage, for output in excess of an established standard, whereas in the shops on the greater part of the system, the usual hourly wage system only was in effect.

"At the beginning of 1925, a plan of co-operation between the federated shop trades and the management of the Canadian National Railways was inaugurated which had, among other objectives, the more efficient operation of shops; stabilization of employment as far as practicable; and the study and development of those matters related to shop operations of mutual benefit to employer and employees. To this end, committees consisting of a substantially equal number of foreman or other local supervisory officers and representative workmen selected by the employees themselves in the respective shops, have since held meetings at regular intervals, at which all suggestions relating to the work and surrounding circumstances excepting wages and conditions related thereto, have been studied and discussed, with the result that substantial improvements of mutual interest to both parties to the plan have been secured. In addition to the various local mixed committees, a similar committee has been established on each general manager's region and also one for the entire system, to deal with questions of a general rather than a local character.

"Among the various questions considered by the system committee is the premium plan of payment in comparison with the fixed hourly wage basis and as a result of these studies, the conclusion has been reached that while the premium plan is attractive theoretically and operates satisfactorily in factories where large numbers of new articles of similar design are being produced, it is very difficult to administer in railway shops where by far the greater proportion of the work consists of refitting worn parts rather than manufacturing new ones, and under these conditions, it is not as generally satisfactory as the hourly wage basis and has certain inherent objectionable features in-so-far as railway repair work is concerned.

"The operation of the co-operative plan has now reached such a stage that the bonus system has ceased to be either advantageous or attractive. Therefore the management regards it as eminently just that the premium system should be abandoned and an appropriate bonus, in addition to the hourly rate, be paid, as a recognition of their co-operative effort, to all employees of the Canadian National Railways in the mechanical department covered by Wage Agreement No. 6, between the Railway Association of Canada and the federated shop trades.

"Therefore, in pursuance of this decision, the bonus or premium system is abolished in all of the shops of the Canada National Railways, and effective December 8, 1926, all of the employees referred to in the above paragraph will receive an increase over

and above their present hourly rate of two cents per hour, in lieu of the premium previously disbursed.

"Under the new method, the company will not pay the workmen, in the aggregate, any more than has been paid hitherto, and in addition will secure certain other economies. Having regard to all of the factors involved, it is confidently believed that this change in practice will, on the whole be of benefit to both the railway and the employees concerned."

Appropriations Recommended for I. C. C.

Appropriations for the Interstate Commerce Commission to the amount of $6,104,967 for the fiscal year ended June 30, 1928, are recommended by the Budget Bureau in the message transmitted to Congress by the President. The appropriation for the present year is $6,153,157.

To the amount appropriated for the Interstate Commerce Commission for the fiscal year 1927, as above stated, should be added $546,680.97 made available for expenditure in that year from appropriations for previous years. The comparable amount available for expenditure in the fiscal year 1927 is therefore $6,699,837.97 and the net reduction in the 1928 estimates is $594,870.97, according to the explanation accompanying the estimates.

For the general work involved in the execution of laws to regulate commerce $2,376,939 is allowed, which is $58,279 over the appropriation for 1927. This is made up, on the one hand, of an increase of approximately $67,000 in the rental of the building occupied by the Interstate Commerce Commission in Washington, and provision for four additional attorneys to be employed on formal complaints, and, on the other hand, of a reduction of approximately $36,000 in the gross amount allowed for personal services, which is made possible by taking advantage of the amount which will possibly accrue during the year by reason of salary lapses due to vacancies, leave of absence without pay, and like causes.

For the work in connection with the investigation of accounts of carriers $1,023,205 is allowed, which is a reduction of $12,064 under the appropriation for 1927 and $276,064 less than is authorized to be expended in that year, including $264,000 unexpended balance from 1926 brought forward. The present force on accounts work is made up of 280 persons at salaries aggregating $796,270. It is proposed to reduce the force to 267 persons, but to increase the salaries of those remaining to $816,055. From this latter amount is deducted possible salary lapses estimated at $13,908, resulting in a net increase in salary payments of $5,777. This is more than overcome, however, and the net reduction of $12,064 effected, by means of decreased allowances for supplies, travel, and other incidental items.

For the related activities of safety-device inspection, signal and train control devices, and locomotive inspection the aggregate allowances for 1928 are $29,230 in excess of the appropriations for 1927. This is made up of $42,704 increase in allowance for subsistence expenses of employees on a travel status to conform to the new uniform travel regulation recently adopted and a reduction of $13,474 for possible salary lapses.

The allowance for the valuation of property of carriers is $1,306,325, which is $121,635 less than the appropriation for 1927 and $404,315.97 less than is authorized to be expended in that year, including $282,680.97 unexpended balance brought forward from previous years. The amount allowed conforms to the estimate of funds previously made for the last year of the three-year program for finishing this valuation work, including recapture work and work under "Order No. 3," as follows:

Completing the primary valuation	$915,264
Recapture work	253,600
Work under "Order No. 3"	137,350
	1,306,214

In arriving at the allowance of $1,306,325 this $1,306,214 was augmented by $28,000 for increased subsistence allowance for employees on a travel status and reduced by $27,889 for possible salary lapses.

The allowance for printing and binding is $150,000, which is a reduction of $10,000 below the appropriation for 1927.

For the Board of Mediation the Bureau recommends $390,000, as compared with $285,220 for this year.

Railway Earnings and Expenses

The net railway operating income of Class I railroads in October was $146,099,828, which for that month was at the annual rate of return of 5.45 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In October last year, net railway operating income was $137,999,971, or 5.26 per cent.

Operating revenues for the month were $608,798,659, compared with $591,268,471 in October last year, or an increase of three per cent. Operating expenses were $414,708,774, an increase of 1.1 per cent.

Class I railroads in October paid $37,359,166 in taxes, an increase of $3,452,084 or 10 per cent over the same month in 1925. This brought the total tax bill of the Class I railroads for the first ten months this year to $329,379,169, an increase of $29,643,944 or 10 per cent.

Eleven Class I railroads operated at a loss in October this year, of which seven were in the Eastern district, one in the Southern district and three in the Western district.

For the first ten months in 1926 the net railway operating income was $1,035,475,630, at the rate of 5.25 per cent on property investment, as compared with $936,960,604, or 4.86 per cent, for the corresponding period of last year.

Operating revenues for the ten months amounted to $5,363,140,570, an increase of 4.5 per cent. Operating expenses were $3,907,340,652, an increase of 2.6 per cent.

Net railway operating income by districts for the first ten months with the percentage of return based on property investment on an annual basis has been as follows:

New England Region	$38,567,402	5.04%
Great Lakes Region	188,713,254	5.56%
Central Eastern Region	220,684,429	5.34%
Pocahontas Region	74,712,540	9.04%
Total Eastern District	522,677,625	5.74%
Total Southern District	136,405,938	5.76%
Northwestern Region	112,100,112	4.10%
Central Western Region	182,669,117	4.88%
Southwestern Region	81,622,838	4.63%
Total Western District	376,392,067	4.57%
United States	$1,035,475,630	5.25%

The rate of return on property investment for the five years ending with October, 1926, has averaged 4.45 per cent per year.

The net for the Class I railroads in the Eastern district during the first ten months was $522,677,625, at the rate of 5.74 per cent, as compared with $468,631,655, or 5.25 per cent, last year. Operating revenues were $2,686,009,806, an increase of 5.4 per cent, while operating expenses were $1,966,972,553, an increase of 3.3 per cent. For October the net railway operating income was $67,112,024, compared with $56,683,290 in October last year.

Class I railroads in the Southern district during ten months had a net of $136,405,938 at rate of 5.76 per cent, as compared with $137,641,471, at the rate of 6.08 per cent, last year. Operating revenues amounted to $730,734,724, an increase of 4.6 per cent, while operating expenses totaled $538,748,200, an increase of 5.4 per cent.

The net in October amounted to $15,829,689, while in the same month last year it was $17,828,513.

Complete returns except for the Kansas, Oklahoma & Gulf showed that the Class I railroads in the Western district for the first ten months had a net of $376,392,067, at the rate of 4.57 per cent, as compared with $330,687,478, at the rate of 4.08 per cent last year. Operating revenues amounted to $1,946,396,040, an increase of 3.3 per cent, while operating expenses totaled $1,401,619,899, an increase of five-tenths of one per cent. For October the net amounted to $63,158,115. The net in October last year totaled $63,488,168.

The summary for the Class I railroads as a whole follows:

CLASS I RAILROADS—UNITED STATES

	1926	1925
Month of October		
Operating revenues	$608,798,659	$591,268,471
Operating expenses	414,708,774	410,240,992
Taxes	37,359,166	33,907,082
Net railway operating income	146,099,828	137,999,971
Operating ratio	68.12	69.38
Rate of return on property investment	5.45%	5.26%
Ten Months Ended October 31		
Operating revenues	$5,363,140,570	$5,131,597,622
Operating expenses	3,907,340,652	3,810,054,428
Taxes	329,379,169	299,735,225
Net railway operating income	1,035,475,630	936,960,604
Operating ratio	72.86	74.25
Rate of return on property investment	5.25%	4.86%

Traffic News

Construction of the proposed Great Lakes-St. Lawrence waterway project is more feasible than the proposed "all-American" canal via the Hudson river, according to a report of the Board of Army Engineers submitted to Congress on December 6 in compliance with a resolution asking a resurvey of the projects.

Figures prepared by the National Coal Association from preliminary car loading reports show that the tonnage of bituminous coal mined during the week ended December 4 exceeded all previous records. The estimated output, subject to revision, is 14,900,000 net tons. The largest output in any preceding week was that of November 20, for which the Bureau of Mines reported tonnage at 14,282,000 net tons. Production during Thanksgiving week was 13,409,000 net tons.

In a complaint filed with the Interstate Commerce Commission by the Inland Waterways Corporation, the government organization operating barge lines on the Mississippi and Warrior rivers, the commission is asked to order the railroads to join the barge line operating in the upper section of the river, between St. Louis and St. Paul-Minneapolis, in establishing reasonable maximum joint through rates between Minneapolis-St. Paul and points on the railroad lines in Illinois, Indiana, Missouri and Iowa, via Dubuque, Ia. The commission is also asked to require the establishment of reasonable and equitable divisions of such joint rates.

The Erie, in conjunction with the Ohio State University College of Agriculture, has recently operated a Better Bull special train through northwestern Ohio, visiting Wren, Ohio City, Spencerville, Alger, Galion, Marion, Richwood, North Lewisburg, Urbana and Dayton during the 10 days it was on the road. Approximately 20,000 persons visited the exhibit of pure bred bulls and prize-winning cows and listened to talks on herd improvement and better feeding. Forty pure bred Jersey, Holstein, Guernsey and Ayrshire yearling bulls were sold for prices ranging from $75 to $225 each. Twelve bulls were given away during the campaign by public spirited individuals and organizations in the places visited.

F. C. Reilly has been appointed assistant to the traffic manager of the Mississippi-Warrior Service, with jurisdiction over solicitation in the St. Louis territory, with headquarters at St. Louis, Mo. H. E. Ruddiman, has been appointed assistant to the traffic manager, with jurisdiction over solicitation in the territory north of the Ohio and Potomac rivers and west of the Mississippi river north of St. Louis territory to and including intermountain territory, with headquarters at Chicago. J. W. Mooney has been appointed assistant to the traffic manager, with jurisdiction over solicitation in the territory south of the Ohio and Potomac rivers and south of St. Louis territory, west to and including the Pacific coast, with headquarters at New Orleans, La.

Boys and girls who were winners of the boys' and girls' club contest on the subject of field crops, livestock gardening and domestic work conducted by the railways during the year, attended the International Livestock Exposition and the National Boys' and Girls' Congress in Chicago held during the week of November 27 to December 4. Those attending had demonstrated their usefulness in some line of work which they had undertaken and were awarded free transportation to the exposition. A dinner was given to the winners on December 2, with the railroads as hosts; and Daniel Willard, president of the Baltimore & Ohio, made an address at the banquet. He told of his own experiences as a boy on the farm and dwelt on the apparent carelessness of many farmers and the neglect which he has noted in his travels.

The proposed reduction of six cents per 100 lb. in the freight rates on grain and grain products from Minneapolis, St. Paul and Duluth to eastern points (announced some weeks ago by the Minneapolis & St. Louis and the Soo Line) was vigorously opposed by representatives of the milling interests of Buffalo, Chicago, Milwaukee, Omaha, Sioux City and southwestern grain cities at the concluding session of the oral argument before the Interstate Commerce Commission on December 2. The tariffs proposing the reduction had been suspended by the commission on the protests of these interests and the eastern railroads. All of the counsel for the objecting milling interests pointed out the extreme delicacy of the adjustment of the grain rates as between competing grain centers and declared that the reduction, which is sought by the Minneapolis interests and the two railroads to meet what they say is an undue advantage possessed by the Duluth market, would discriminate against competing markets.

Chicago Shippers' Conference

The Chicago Shippers' Conference, at a meeting on December 8, adopted a resolution supporting the rivers and harbors bill. The Gooding amendment recently proposed in Congress was condemned. It was announced that the railroads and shippers have reached an agreement as to the class freight rates and the relationship of classes, to apply in Western Trunk Line territory, and that a plan for the adjustment of class rates will be presented at a meeting to be held at Hotel LaSalle, Chicago, on December 16.

Secretary of Agriculture Wants Lower Freight Rates

William M. Jardine, Secretary of Agriculture, in his annual report, includes the following on the subject of railroad freight rates:

"Transportation charges, although not overhead in the proper sense of that term, nevertheless are often a burdensome, uncontrollable factor in farm business. Farm commodity prices especially in areas distant from markets, are seriously depressed by high freight rates. It is my conviction, often stated, that we must have substantial readjustments in freight rates. There have been no freight rate reductions of importance on agricultural commodities in the last year. The Department of Agriculture's index of freight rates indicates that they are still 58 per cent higher than before the war. It is instructive to compare this figure with the index for farm commodity prices, which in September stood at only 34 per cent above the prewar level."

B. & M. Leases Boston Waterfront Facilities

The Boston & Maine has leased its Hoosac tunnel docks, Mystic wharf and certain other Boston waterfront properties to the Mystic Terminal Company, which has been operating the coal discharging towers at Mystic wharf for the last three months.

E. S. French, president of the terminal company, in a statement announcing its policy, says that it is planned to take steps "immediately to modernize the equipment and practices at the terminals."

Existing rates, rules and regulations as to the wharves, elevators and other facilities will continue, with a nominal dockage charge similar to those at other ports, on vessels using the terminals after January 1. The improved facilities and methods, Mr. French states, should more than offset the dockage charges, in lessening the time that vessels are tied up at the docks, and in reducing handling and other terminal costs.

Canadian Railway Board Has Many Rate Cases

So many applications and cross-applications are now before the Canadian Railway Board in its hearing of the case arising out of the instruction to the Board by the government for a general equalization of freight rates and the removal as far as possible of discrimination against given areas in Canada that it has become a labyrinth. Last week the Board's final hearing in the general case opened at Ottawa with a large array of lawyers for the railways and the various applicants. It will be adjourned on December 17 for the Christmas vacation and resume immediately afterwards. The prospect is that this case will occupy the Board for some weeks. When that is disposed of there is an order from the government to provide for such freight rates as will facilitate the movement of Canadian-mined coal from Alberta and the Maritime provinces to Ontario and Quebec, also an order to provide rates that will facilitate a larger movement of freight through Canadian, especially Atlantic seaports. When that is completed there is to be heard an application from the Canadian express companies for approval of a higher scale of rates.

Commission and Court News

Interstate Commerce Commission

Argument on Grain Rates

Oral arguments were heard by the entire membership of the Interstate Commerce Commission at Washington on December 1 and 2 on the proposals of the Minneapolis & St. Louis and the Minneapolis, St. Paul & Sault Ste. Marie to reduce rates on grain and grain products from Minneapolis, St. Paul, and Duluth to eastern points by six cents per hundred pounds, for the purpose of regaining part of the traffic these roads say that they and Minneapolis have lost to Duluth and the rail and water lines because of the change in the relation of the rates made during the war. The tariffs were suspended by the commission on protests by the eastern and other western railroads and by milling interests at Duluth, Chicago, Kansas City, Buffalo and other points.

Sugar Rates Unreasonable, Says Examiner

The Interstate Commerce Commission has made public a proposed report by Examiner Frank M. Weaver recommending findings to be made by the commission in its Southeastern sugar rate investigation. The examiner recommends finding unreasonable the all-rail rates on sugar, c. l. from Boston, New York, Philadelphia and Baltimore; from New Orleans and other producing points in Louisiana, and from Savannah and Port Wentworth, Ga., Charleston, S. C., Jacksonville, Fla., Norfolk, Va., and other south Atlantic ports to points in Kentucky, Tennessee, Mississippi, Alabama, Georgia, North Carolina, South Carolina, Florida and Louisiana east of the Mississippi river; and rates on sugar from Savannah and Port Wentworth, Ga., to points in Virginia. A scale of reasonable rates to be prescribed for the future is also included in the report. Water and rail rates on sugar from Atlantic and Gulf ports to destinations within the territory described above would also be found unreasonable, according to Mr. Weaver's recommendations, and intrastate rates on sugar within the states of Georgia, South Carolina and Virginia would be found unduly prejudicial. The examiner recommends that fourth section relief as asked by the railroads be granted to the extent indicated in the report and that the cancellation of l. c. l. rates be authorized.

State Commissions

The New York State Public Service Commission has initiated proceedings for the elimination of ten grade crossings on the Long Island in Suffolk County and three on the New York Central at Pocantico Hills.

The New York Transit Commission, having made further investigation of conditions at highway crossings on the Long Island, announced on December 3 that automatic flashing signals and automatic bells would be ordered installed at 28 crossings, additional to the 19 covered by the earlier order. (Noted in the *Railway Age* of December 4, page 1132.)

Public Service Commission of Kansas Holds Hearing on Train Lengths

A hearing before the Public Service Commission of Kansas on a complaint filed by the Brotherhood of Railway Trainmen and the Brotherhood of Locomotive Firemen and Enginemen on excessive freight train lengths on six major railroads in Kansas, including the Atchison, Topeka & Santa Fe, the Union Pacific, the Chicago, Rock Island & Pacific, the Missouri-Kansas-Texas, the St. Louis-San Francisco and the Missouri Pacific was begun on December 1 at Topeka, Kan., and will probably last three weeks. During the first three days testimony was presented by witnesses for the brotherhoods and dealt with air brake equipment on long trains and the danger to employees.

Foreign Railway News

British Train Accident Results in Death of Nine and Injury to Six

An express passenger train from York to Bristol on the London, Midland & Scottish was wrecked on November 19 when it struck two derailed cars of a mineral train which was running in the opposite direction on an adjoining track. The locomotive of the passenger train escaped injury, but the derailed freight cars penetrated several of the coaches, killing nine passengers and injuring six. The freight train was still in motion at the time of the accident, its engineman not knowing that the cars were derailed. The prime cause of the accident is reported to have been the bursting of the side door on one of the mineral cars, projecting the load around the wheels and derailing the car as well as the following one.

New Railway in Panama

The government of Panama is planning to develop more of the rich coffee country in Chiriqui province and to this end has awarded a contract to F. H. Arosemena, a citizen of Panama, to build a single track railroad, 32 miles long, from Concepcion to Puerto Armuelles, as an extension of the Chiriqui National Railroad and to build a 1,300 ft. reinforced concrete pier at the new deep water harbor at Puerto Armuelles. Approximately $3,000,000 will be expended on these improvements.

Under this contract the railroad, which will be of 3 ft. gage, will be equipped with locomotives and other rolling stock and there will be 45 structural steel and 13 girder bridges along the line.

Mr. Arosemena has contracted with the J. G. White Engineering Corporation of New York to act as his engineers for the design of the wharf and to carry out the complete construction of both the wharf and the railroad.

Operation of Indian Railways in 1925-26

The gross revenue of Indian state-owned railways, comprising nearly three-fourths of the total mileage of all Indian railways, amounted to $361,818,182 during the fiscal year 1925-26 and the net revenue to $131,818,182, according to preliminary statistics recently issued by the Railway Board.

On all railways 599,000,000 passengers were carried, an increase of 23,000,000 over the figures for the previous year; and, as a result, passenger earnings increased $2,545,455. The statistics also show that there was a satisfactory increase (nearly 2,000,000 tons) in freight traffic, but in spite of this, earnings from this source decreased by approximately $7,272,727. This drop was occasioned by a decrease from 273 miles to 250 miles in the average distance over which consignments were carried, chiefly, no doubt, because there was little export of wheat from the Karachi district.

In accordance with the policy of railway extension in the Punjab, the construction of two lines has been sanctioned by the Railway Board. The first is between Lyallpur and Jaranwala, a distance of 22 miles. The other will connect Rohtak, Gohana, and Patipat, a distance of about 45 miles, forming a direct connection with the Delhi-Ambala line of the North-Western Railway.

The government of India is conducting an investigation to determine whether the following proposed railway lines, aggregating about 500 miles, are likely to prove sufficiently remunerative to warrant early construction: (1) A middle Sind line from Mahrabpur to Nawabshah, with branches; (2) a line from Sita Road to Kanibar, with possible branches; (3) a line from Dodapur to Jacobabad; (4) a line from Nawabshah to Khadro; (5) a line from Jhol, via Pithoro, to Jhudo; (6) the Bombay-Sind connecting railway. The survey of a number of other similar schemes has begun and it is expected that further sanctions will shortly be announced.

Equipment and Supplies

Locomotives

THE ST. LOUIS & O'FALLON has ordered one Prairie type locomotive from the Baldwin Locomotive Works.

Freight Cars

THE CHICAGO & NORTH WESTERN is inquiring for 25 caboose car underframes.

THE DELAWARE, LACKAWANNA & WESTERN is inquiring for 25 Rodger ballast cars.

THE ATCHISON, TOPEKA & SANTA FE is inquiring for 150 cars for carrying sulphur.

THE BOSTON & MAINE contemplates coming in the market for 500 hopper bottom coal cars.

THE ATCHISON, TOPEKA & SANTA FE is inquiring for 1,500 box cars and 300 gondola cars.

THE CHICAGO & EASTERN ILLINOIS will rebuild 300 miscellaneous freight cars in its own shops.

THE SKELLY OIL COMPANY, Tulsa, Okla, is inquiring for 70 insulated tank cars of 8,000 gal. capacity.

THE BALTIMORE & OHIO is inquiring for 1,000 hopper cars of 70 tons' capacity and 2,000 steel box cars of 50 tons' capacity.

THE CUSHING REFINING & GASOLINE COMPANY, Cushing, Okla., is inquiring for 25 insulated tank cars of 8,000 gal. capacity.

THE GREAT NORTHERN, as a means of stabilizing the employment of its mechanical forces, is building 500 miscellaneous freight cars in its own shops.

THE CONSOLIDATED RENDERING COMPANY, Boston, Mass., has ordered one tank car of 6,000-gal. capacity for carrying muriatic acid, from the General American Tank Car Company.

THE NEW YORK CENTRAL has ordered 20 automatic steel dump cars from the Clark Car Company. This is in addition to the previous order for 20 cars reported in the *Railway Age* of November 27. The railroad company has 20 more cars yet to be placed.

Passenger Cars

THE GULF, MOBILE & NORTHERN is inquiring for two coaches.

THE CHICAGO, AURORA & ELGIN is inquiring for 15 motor cars.

THE NEW YORK CENTRAL is inquiring for 27 all steel dining cars.

THE CHICAGO, SOUTH SHORE & SOUTH BEND is inquiring for 10 motor cars and 10 trailers.

THE NORFOLK & WESTERN is inquiring for three all-steel dining cars. In the *Railway Age* of November 27 it was reported that this company contemplated buying three dining cars.

THE ATCHISON, TOPEKA & SANTA FE is inquiring for 20 chair cars, 2 dining cars, 4 buffet library cars, 2 combination coach, baggage and smoking cars, 3 parlor cars, 2 business cars, 10 baggage cars, 10 postal cars and 5 combination mail and baggage cars.

Iron and Steel

THE PENNSYLVANIA has ordered 700 tons of steel for signal bridges from the McClintic-Marshall Company.

THE LOUISVILLE & NASHVILLE has ordered 1,250 tons of steel for various bridges, from the McClintic-Marshall Company.

THE NEW YORK, CHICAGO & ST. LOUIS has ordered 250 tons of steel for various bridges, from the McClintic-Marshall Company.

THE UNION PACIFIC has ordered 135 tons of structural steel for a coaling station at Ogden, Utah, from the Paxton & Vierling Iron Works.

THE NEW YORK CENTRAL has divided an order for 2,500,000 tie plates among the Illinois Steel Company, the Bethlehem Steel Company, the Inland Steel Company, Dilworth, Porter & Co., Inc., and Jones & Laughlin Steel Company. The company has also divided an order for 20,000 kegs of spikes among the Illinois Steel Company, the Bethlehem Steel Company, the Inland Steel Company and Jones & Laughlin Steel Company, and 152,700 angle bars among the Illinois Steel Company, the Inland Steel Company and the Bethlehem Steel Company.

Machinery and Tools

THE NEW YORK CENTRAL has ordered a 27-in. by 16-ft. time saver lathe from the Niles-Bement-Pond Company.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has ordered a 16-in. Pratt & Whitney lathe from the Niles-Bement-Pond Company.

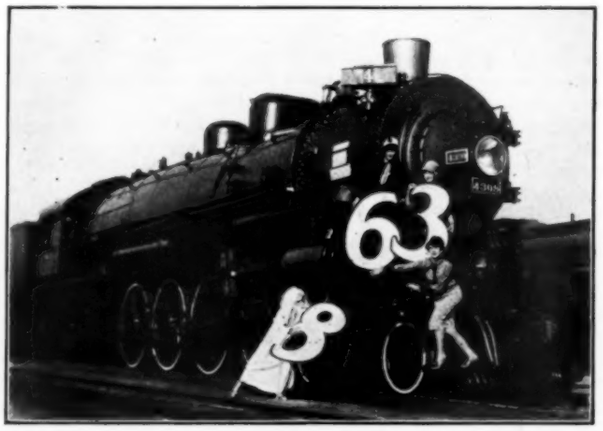
Signaling

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has ordered from the General Railway Signal Company, an electric interlocking machine, 27 working levers, for Lawrenceburg Junction, Ind.

THE TOKYO UNDERGROUND RAILWAY, Japan, has ordered from the Union Switch & Signal Company, through Mitsui & Company, electric interlockings for two stations, together with a number of automatic block signals. The interlocking machines are 11 lever and 7 lever, type F.

THE IMPERIAL GOVERNMENT RAILWAYS of Japan have ordered from the Union Switch & Signal Company, through Mitsui & Company, an electric interlocking, 23 levers, type F, to be installed at Shinagawa. The order includes 19 switch movements, a track model and other apparatus.

THE TRAVELER now has the choice of first, second or third class sleeping accomodation on the main lines of the German Railroads. Each compartment in the third class sleepers is fitted with three sleeping berths; such cars are running on seven routes.



Symbolizing the Reduction in Schedule of the Golden State Limited from 68 to 63 Hours

Supply Trade News

The American Steel Foundries Company, Chicago, has purchased the **Verona Steel Castings Company,** Verona, Pa.

Warren Corning, who has become president of the **Chicago Tube & Iron Company** following its consolidation with Warren Corning & Company, was born in Peoria, Ill., in 1889, and received his education at Mt. Pleasant Military Academy, Kenyon College and the University of Chicago. In 1912 he entered the employ of the Hewitt Manufacturing Company, Chicago, where he was employed in the plant and in the following year became sales representative. In 1914 he organized Corning, Dunne & Company, Chicago, which in 1916 was taken over by Warren Corning & Company. In 1917 he discontinued the operation of this company to enter the army as a private in the Thirteenth Engineers. After being promoted to sergeant and to first lieutenant in the department of light, railways and roads, he was commissioned captain of Company D of the Third Engineers. Later he was appointed aid-de-camp to Major General M. M. Black, chief of engineering. In 1918 he returned to civil life to resume the operations of his company, which occupation he has followed until his recent election. **Fred Gardner,** who became vice-president and general manager of the Chicago Tube & Iron Company following the consolidation, entered business in the sales department of Joseph T. Ryerson & Son in 1908. In 1913 he became associated with the Oxweld Railroad Service Company and in 1923 resigned to become president of the Chicago Tube & Iron Company, which position he has held until his recent appointment.

Warren Corning

Fred Gardner

A. N. Martin, formerly in charge of the purchasing department of the **Pyle-National Company,** with headquarters at Chicago, has been elected vice-president, with headquarters at New York.

Frank K. Metzger, manager of sales of the **Standard Steel Works Company** at Philadelphia, Pa., has been elected a vice-president to succeed Richard Sanderson, resigned. **R. Nevin Watt** succeeds Mr. Metzger as manager of sales, with headquarters at Philadelphia.

J. T. Stephenson, railway supply manufacturer's agent, with office in the Munsey building, Washington, D. C., has been appointed railway sales representative in the territory embracing Washington, D. C., Baltimore, Md., and vicinity, of the **Warren Tool & Forge Company,** Warren, Ohio.

Carl F. Purscher, formerly in the purchase and stores department of the Boston & Maine, has been appointed a representative in the signal department of the **Railroad Supply Company,** with headquarters at 1293 Commonwealth avenue, Boston, Mass., and will cover Massachusetts, Maine, New Hampshire and Vermont.

Archibald H. Ehle, general sales manager of the **Baldwin Locomotive Works,** Philadelphia, Pa., has been elected vice-president in charge of domestic sales, with headquarters at the same place, to succeed Grafton Greenough, deceased. **Stewart McNaughton,** sales manager of the central zone, with headquarters at Philadelphia, has been elected manager of domestic sales, succeeding to the former duties of Mr. Ehle. Mr. McNaughton will continue to have his headquarters at Philadelphia.

Orrin H. Baker of the sales department of the **Illinois Steel Company** has been promoted to assistant general manager of sales in charge of the rail bureau to succeed P. W. O'Brien, deceased. **William I. Howland, Jr.,** assistant to the assistant general sales manager in charge of the bar bureau has been promoted to assistant general sales manager in charge of the bar bureau to succeed B. E. Hamilton, deceased. Mr. Baker was born in Hamilton, Ont., in 1885, and graduated from the University of Illinois in mechanical engineering in 1907. He entered the employ of the Illinois Steel Company in the same year, starting at the South Chicago plant as a chemist. During the next five years he worked in all parts of the steel mill, principally on blast furnace practice, and from 1910 to 1912 was special assistant to the general superintendent, working on engineering and production problems. In the latter year he entered the sales department, devoting his time to structural and railroad sales. In 1917 he was appointed representative of the American Iron & Steel Institute on the Pacific coast in charge of the allocation of steel for emergency fleet boats. In 1919 he returned to the sales department and engaged in the work of the railroad bureau, which position he has held until his recent promotion. Mr. Howland was born in Chicago on July 11, 1887, and graduated from Yale University in mechanical engineering in 1908. He entered the employ of the Illinois Steel Company in the open hearth department of the South Chicago works in the same year, and in 1912 was promoted to assistant superintendent of open hearth plants. In the following year he was appointed superintendent of electric furnaces and in 1914 entered the sales department, engaging in the sale of alloy

O. H. Baker

W. I. Howland, Jr.

and electric steels. In 1917 he enlisted in the bureau of ordnance in the navy and was in charge of the manufacture of all gray iron forgings. He returned to the Illinois Steel Company in 1919 as assistant to the assistant general manager of sales, in charge of the bar bureau, which position he has held until his recent promotion.

Charles M. Griffith has been elected a vice-president of **William Wharton, Jr., & Company, Inc.,** Easton, Pa., Mr. Griffith has been connected with the Wharton Company for many years, having served at the mill of the North Branch Steel Company, Danville, Pa., with which he was associated as secretary and for some years past he has been sales manager of the Wharton Company. He is a director of William Wharton, Jr., & Company, Inc., the Tioga Steel & Iron Company and the Philadelphia Roll & Machine Company.

W. L. Foster, formerly sales engineer of the Bridgeport Brass Company, Bridgeport, Conn., has entered the employ of the **American Brown Boveri Electric Corporation,** to engage in sales promotion activities, with headquarters at New York. **Harold D. Gregory** has joined the patent department of the American Brown Boveri Electric Corporation, Camden, N. J. For several years Mr. Gregory was patent examiner of the Eastern Railroad Association at Washington, D. C., and for the past few years has been with Bottom, Hudnall, Lecher & McNamara, Milwaukee, Wis., as solicitor of patents in its patent department.

Henry S. LaBarge, who has been appointed manager of railway and marine sales of the **Glidden Company,** Cleveland, Ohio, was born in St. Louis, Mo., in 1887. He entered business in 1905 as a representative of the Handlan-Buck Manufacturing Company, St. Louis, Mo., and in 1915 was placed in charge of the Chicago office. He held this position until 1921 when he entered the employ of H. Channon & Company, Chicago, as manager of the railroad department, which position he held until July, 1925, when he was elected vice-president. He resigned from this position in January, 1926, to organize his own railway supply business and handled several accounts, including that of the Glidden Company. He has followed this occupation until his recent appointment as manager of railway and marine sales.

Henry S. LaBarge

The Railway Steel-Spring Company on December 1 closed its office in Louisville, Ky. The business of this district will hereafter be handled by **George B. Powell,** sales agent, Syndicate Trust building, St. Louis, Mo. **W. E. Corrigan,** district sales manager for the **American Locomotive Company,** Rialto building, San Francisco, Cal., now represents also the Railway Steel-Spring Company, succeeding Herbert G. Cook, who has represented the Spring Company on the Pacific coast for a number of years. The business of the combined companies will be handled from Mr. Corrigan's present address. **A. W. Sullivan,** sales agent of the Railway Steel-Spring Company at Pittsburgh, has moved his offices from Twentieth and Liberty streets to the Farmers Bank building, Pittsburgh, Pa.

Locomotive Shipments in November

November shipments of railroad locomotives from principal manufacturing plants based on reports received by the Department of Commerce totaled 128 locomotives, as compared with 151 in September and 106 in November, 1925. A table showing details, as prepared by the department, follows:

RAILROAD LOCOMOTIVES

Year and month	Shipments Total	Shipments Domestic Steam	Shipments Domestic Electric	Shipments Foreign Steam	Shipments Foreign Electric	Unfilled orders end of month Total	Unfilled orders end of month Domestic Steam	Unfilled orders end of month Domestic Electric	Unfilled orders end of month Foreign Steam	Unfilled orders end of month Foreign Electric
1925										
November	106	52	8	46	...	585	435	46	64	40
Total (11 mos.)	1,112	687	126	263	36	...	...	...	...	...
December	104	68	18	14	4	708	557	54	56	41
Total (year)	1,216	755	144	277	40	...	...	...	...	...
1926										
January	121	96	11	14	...	653	506	53	52	42
February	163	101	22	38	2	572	442	60	30	40
March	162	146	11	4	1	780	635	50	54	41
April	151	122	12	1	16	713	580	44	60	29
May	140	105	14	12	9	726	585	46	72	23
June	159	133	11	12	3	667	522	53	72	20
July	132	82	20	30	...	555	445	36	51	23
August	124	78	16	23	7	525	455	26	28	16
September	134	109	13	5	7	498	386	24	77	11
October	151	124	15	12	...	390	286	20	71	13
November	128	109	15	3	1	517	391	27	84	15
Total (11 mos.)	1,565	1,205	160	154	46	...	...	...	...	...

Obituary

George Hull Porter, railway sales manager of the Graybar Electric Company, Inc., with headquarters at Chicago, **died** on December 7, of apoplexy, while waiting to take the oath of office following his election as trustee of the Sanitary District of Chicago. He was born on July 30, 1883, at Danbury, Conn., and received his education at the Mount Pleasant Military Academy, at Ossining, N. Y. Since 1902 he has spent practically all of his time in the electrical industries, becoming a member of the Western Electric Company's organization in April, 1908, as a steam railway salesman connected with the Chicago office. Some time after that he became western manager of the railway sales department. Mr. Porter, in addition to serving as president of various railroad and electrical associations and chairman of civic societies and committees, had also been for some time captain in the First Regiment of the Illinois Reserve Militia. In 1918 he entered the government service, serving on the staff of the quartermaster general as a private and received a commission of captain some time after. He rejoined the ranks of the Western Electric Company in December, 1918; in 1919 he was appointed railway sales manager and directed the company's railway business for the entire country. The Graybar Electric Company, Inc., was organized in December, 1925, to take over the electric supply business carried on by the Western Electric Company.

George Hull Porter

Trade Publications

JOURNAL BOX LID.—The Allegheny Steel Company, Brackenridge, Pa., has issued Bulletin No. 8 describing and illustrating in cross-section the Sym-Asco journal box lid.

CONTROL EQUIPMENT.—Unit control sections, particularly applicable to the multiple charging of batteries used in electric industrial trucks, electric road trucks and storage battery locomotives, are described and illustrated in a four-page folder being distributed by the General Electric Company, Schenectady, N. Y.

Railway Construction

CENTRAL OF NEW JERSEY.—A contract has been awarded to the Wilson & English Construction Company for the construction of reinforced concrete decks and backwalls of abutments, installation conduits, waterproofing, etc., to Hall avenue, New Brunswick avenue, Market street and Smith street bridges at Perth Amboy, N. J., estimated to cost $63,575.

CHESAPEAKE & OHIO.—A contract has been awarded to Haley, Chisholm & Morris, Charlottesville, Va., for enlarging and lining with concrete the Brookville tunnel at Greenwood, Va., estimated to cost $200,000.

CHICAGO & NORTH WESTERN.—A contract for the construction of a freight transfer shed at Proviso, Ill., 1,400 ft. by 700 ft., has been awarded to Peppard & Burrill, Minneapolis, Minn., at a cost of $850,000. Grading, trackage facilities and platform drawbridges will make the entire project involve an expenditure of $3,000,000.

FLORIDA EAST COAST.—This road had asked bids on a freight house and also a passenger station, both to be located at Kelsey City, Florida. The freight house will be 40 ft. by 88 ft. and built of brick and stucco, while the passenger station will be built of cement block and will be 27 ft. by 65 ft. The road has awarded contract for the construction of a brick and stucco freight house, 50 ft. by 130 ft., to be located at Hopkins, Florida, and to cost about $40,000, to the firm of the name of W. P. Thurston, St. Augustine, Florida.

FT. WORTH & DENVER CITY.—Plans are being prepared for the construction of repair shops at Childress, Tex., estimated to cost, with equipment, about $100,000.

ILLINOIS CENTRAL.—A contract has been awarded for the remodeling and enlarging of the passenger station at Jackson, Miss., at a cost of $221,500.

ILLINOIS CENTRAL.—A contract has been let to Earl Cline for the construction of an automobile handling shed at Birmingham, Ala., to cost $25,000. Plans have been prepared for the construction of a 2-story passenger station at Belleville, Ill., 143 ft., by 30 ft., to cost about $250,000.

LOUISVILLE & NASHVILLE.—A general contract has been let to the M. J. Hoffman Construction Company, Louisville, Ky., for the construction of reinforced concrete, brick and steel roundhouse, machine shop and office building at Evansville, Ind., at a cost of about $200,000.

MINNEAPOLIS, NORTHFIELD & SOUTHERN.—This company has been ordered by the Minnesota Railroad and Warehouse Commission to construct grade separation structures at three points on its new six-mile line from Luce Line Junction, Minn., to Robbinsdale.

MISSOURI-KANSAS-TEXAS.—This company has acquired 15 acres of land at Houston, Tex., for the construction of a terminal and freight warehouse. Including the cost of the land and trackage facilities the warehouse project involves an expenditure of about $1,100,000.

MISSOURI PACIFIC.—A general contract has been let to the List Construction Company, Kansas City, Mo., for the construction of a union passenger station and terminal at Texarkana, Tex., to be jointly owned and used by the Missouri Pacific, the Texas & Pacific, the St. Louis-Southwestern and the Kansas City Southern. The cost of the entire project is estimated at $1,350,000.

MISSOURI PACIFIC.—This company contemplates the construction of brick passenger, freight and express stations at San Juan, Tex., to replace the combination building recently destroyed by fire. Between Bishop and Robstown, 18 miles, the track will be raised three feet to place it above flood water level which will include the raising of all bridges. Plans have also been prepared for the construction of an industry track 4,285 ft. long, at San Benito, Tex., and for the construction of new and the lengthening of old passing tracks at McAllen, Tex., La Feria, Alamo, Mercedes, Weslaco, Donna, San Juan, Pharr and Mission.

NEW YORK CENTRAL.—This company has awarded the contract for repairing the pier of Bridge 141, Kingston, N. Y., to cost about $65,000, to O'Brien Brothers, Inc.; and the contract for alterations to Pier 12 and the Express Pier, at Weehawken, N. J., to cost about $85,000, to G. W. Rogers Construction Corporation; and the contract for eliminating grade crossings at Fullers, N. Y., to cost about $150,000, to the Walsh Construction Company, Davenport, Ia.

PENNSYLVANIA.—Announcement has been made by the Pennsylvania that an immediate start will be made upon the construction of its improved freight terminal facilities at Little Creek, near Norfolk, Va. This action followed issuance by the War Department, in terms accepted by the road, of a permit covering the channel dredging and breakwater work which formed part of the new terminal project. Construction of the new terminal facilities will provide the Pennsylvania a shorter and more advantageous route for ferrying and freight cars across the mouth of the Chesapeake Bay between Cape Charles and Norfolk. The new route reduces the former 36-mile trip to approximately 24 miles, with complete avoidance of the congested waters and a corresponding increased ease of operation.

SOUTHERN PACIFIC.—Construction of 6.3 miles of second track between San Luis Obispo, Cal., and Hadley, including a drill track, three crossovers and 1.89 miles of yard tracks is contemplated. A contract has been awarded for the strengthening of a steel bridge, 1,692 ft. long, over the Rio Grande river at El Paso, Tex., including the addition of one truss to each span.

TEXAS & PACIFIC.—A contract for the construction of a two-story reinforced concrete and brick passenger station at Natchitoches, La., has been awarded to the Christy-Dolph Construction Company, Dallas, Tex. The structure, which will also house express facilities, will cost about $50,000.

UNION PACIFIC.—Bids are being received for the construction of shop buildings and an enginehouse at Ogden, Utah.

B. & M. Rearranges Its Boston Freight Terminal

The Boston & Maine is now undertaking a $4,000,000 project, the purpose of which is to unify and modernize its Boston freight terminal which at present constitutes the terminals of the four roads originally entering Boston from the north but now included within the Boston & Maine. In unifying the present scattering terminal facilities, it is proposed to centralize all of the l. c. l. and car-load delivery yards in East Cambridge, and to rearrange the existing track layouts so as to segregate more completely passenger train movements from freight traffic. These improvements, on which $2,000,000 is being expended at the present time, also include a $300,000 steel freight house, a $150,000 reinforced-concrete freight house with a five-story warehouse, modern automobile unloading facilities and extensive addition to present yards, involving some 25 miles of new tracks.

THE MINISTRY OF RAILWAYS of Poland has ordered 40 locomotives of the largest type now made in Poland to be made by the Warsaw Corporation. The date for delivery of these locomotives is not specified but has been made dependent on the time within which Upper Silesian smelting works and rolling mills can supply the requisite raw materials.

GROSS EARNINGS of the South Manchuria Railway Company increased by 27 per cent, during six months ended September 13, 1926, as compared with the same period of 1925.

THE SWISS FEDERAL RAILWAYS report a decrease of 100,000 tons of domestic freight for 1925. A total of 406 stations reported decreases in the amount of freight handled as against 268 stations reporting increases. The increase reported by these latter stations consisted, however, principally of goods paying low freight rates.

Railway Financial News

ALABAMA GREAT SOUTHERN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to nominally issue $500,000 of first consolidated mortgage 5 per cent gold bonds.

BALTIMORE & OHIO.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire the Great Haven & Bruceton Railroad, which operates from Cheat Haven, Pa., to a point in Monongalia county, W. Va., 6.5 miles, by purchase of its entire capital stock for $150,000.

GAINESVILLE MIDLAND.—*Abandonment.*—The reorganization committee of the security holders has applied to the Interstate Commerce Commission for a certificate authorizing the abandonment of that portion of the line from Belmont to Monroe, Ga., 32 miles.

GEORGIA & FLORIDA.—*Securities.*—The receiver has applied to the Interstate Commerce Commission for authority for a change in the maturity dates of an issue of $250,000 to $271,900 of receivers' certificates previously authorized and also for an issue of $750,000 of 5 per cent equipment trust certificates.

JACKSONVILLE & HAVANA.—*New Directors.*—Aaron Sapiro, general counsel for the Co-operating Marketing Organizations of Agricultural Products, Chicago, and Mark T. McKee, director of the Brotherhood of American Yeomen, Detroit, Mich., have been elected directors.

NEAME, CARSON & SOUTHERN.—*Abandonment.*—The Interstate Commerce Commission has issued a certificate authorizing the Delta Land & Timber Company to abandon its line of railroad known as the Neame, Carson & Southern extending from Neame to Camp Baker in Vernon Parish, La., and from Carson Mill to C. C. Junction in Beauregard Parish, 22.13 and 3.19 miles, respectively. Of the road's traffic, 98 per cent was products of forests and 97 per cent traffic of the Delta Company which has decided to abandon lumber operations in this territory.

NEW HOLLAND, HIGGINSPORT & MT. VERNON.—*Abandonment.*—The New Holland Corporation has been given a certificate by the Interstate Commerce Commission authorizing it to abandon the New Holland, Higginsport & Mt. Vernon which extends from New Holland, N. C., to Wenona, 35 miles. This railroad was authorized by the commission in February, 1922, to complete the construction of this line, which had been practically completed by the North Carolina Farms Company. The organization of the railway company, however, was never completed and in August, 1923, the farms company was placed in receivership and its properties, including the railroad, were acquired by the New Holland Corporation at a judicial sale.

NORTHERN PACIFIC.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon and take up its Coda branch, of which the commission has previously authorized the abandonment of 24 miles, from Coda to Washburn, Wis., while requiring the remaining 9 miles from Iron River to Coda to be kept in operation for an additional period.

PENNSYLVANIA.—*New Director.*—Richard B. Mellon, president of the Mellon National Bank of Pittsburgh, has been elected a director succeeding George H. McFadden, deceased.

RIO GRANDE.—*Sale.*—Col. W. T. Eldridge of Sugar Land, Tex., has announced the transfer of his equity in this railroad to R. Lee Kempner and I. H. Kempner of Galveston, Tex. The line was removed from receivership early in 1926 but by court order cannot be formally sold until February, 1928.

SEABOARD AIR LINE.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control by lease of the Tampa & Gulf Coast, 78.27 miles.

SOUTHERN PACIFIC.—*Trackage Rights.*—This company has been authorized by the Interstate Commerce Commission to operate under trackage rights over the Fresno Interurban in common with the Atchison, Topeka & Santa Fe which recently acquired the Interurban line by lease. The Fresno extends from a connection with the Santa Fe near Fresno, Cal., to a point about two miles northwest of Minkler, 17.6 miles. The commission in its findings required that the trackage rights agreement be limited to the term of the Santa Fe's lease of the Interurban Line.

TENNESSEE & NORTH CAROLINA.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control by lease of the Smoky Mountain, which has also applied to the commission for authority to acquire and operate the line from Vestal to Sevierville, Tenn., 27.8 miles, formerly operated by the Knoxville & Carolina, and for authority to issue $100,000 of stock to be issued to the purchasers of the property at foreclosure sale in exchange for the property.

TRINITY & BRAZOS VALLEY.—*Receiver's Certificates.*—The Interstate Commerce Commission has granted authority for the issuance of $400,000 third series receiver's certificates to be sold at par to the Colorado & Southern and the Chicago, Rock Island & Pacific.

Average Price of Stocks and Bonds

	Dec. 7	Last Week	Last Year
Average price of 20 representative railway stocks	100.74	100.75	94.80
Average price of 20 representative railway bonds	96.90	96.83	93.42

Valuation Reports

The Interstate Commerce Commission has issued valuation reports placing the final value for rate-making purposes of the property owned and used for common carrier purposes, as of the respective valuation dates, as follows:

FINAL REPORTS

Cumberland & Manchester	$504,199	1918
Emmitsburg	148,500	1918
Galesburg, Rockford & Northern	95,000	1919
Lawndale Railway & Industrial Co.	81,575	1918
Leavenworth & Topeka	900,000	1916
Loranger, Louisiana & Northeastern	66,427	1918
Savannah Union Station Company	818,000	1917
Washington Run	274,870	1918
Washington Western	164,410	1917
Youngstown & Northern	550,000	1919

TENTATIVE REPORTS

Cincinnati, Burnside & Cumberland River	$76,000	1918
Cincinnati Northern	7,335,000	1918
Harriman & Northeastern	789,000	1918
Ogden Union Depot & Railroad Company	907,058	1916
Pueblo Union Depot & Railroad Company	386,000	1918
Southern Pacific Terminal Company	3,677,112	1918

Dividends Declared

Atchison, Topeka & Santa Fe.—Preferred, $2.50, semi-annually, payable February 1 to holders of record December 31.

Chicago, Burlington & Quincy.—5 per cent, semi-annually, payable December 27 to holders of record December 17.

Chicago, North Shore & Milwuakee.—Preferred, 1½ per cent, quarterly; prior lien, 1¾ per cent, quarterly, both payable January 1 to holders of record December 15.

Chicago, Rock Island & Pacific.—6 per cent preferred, 3 per cent, semi-annually; 7 per cent preferred, 3½ per cent, semi-annually, both payable December 31 to holders of record December 10.

Colorado & Southern.—Common, 3 per cent; first preferred, 2 per cent, semi-annually; second preferred, 4 per cent, annually, all payable December 31 to holders of record December 12.

Fonda, Johnstown & Gloversville.—Preferred, 1½ per cent, quarterly, payable December 15 to holders of record December 10.

Lehigh Valley.—Common, $.87½, quarterly; extra, $1.50; preferred, $1.25, quarterly, all payable January 3 to holders of record December 18.

Old Colony.—1¾ per cent, quarterly, payable January 1 to holders of record December 11.

Pere Marquette.—Common, 1½ per cent, quarterly, payable January 3 to holders of record December 15. Prior preference, 1¾ per cent, quarterly; preferred, 1¾ per cent, quarterly, both payable February 1 to holders of record January 15.

St. Louis, Rocky Mountain & Pacific.—Common, 1½ per cent, quarterly; preferred, 1¾ per cent, quarterly, both payable December 31 to holders of record December 15.

St. Louis-San Francisco.—Common, 1¾ per cent, quarterly, payable January 1 to holders of record December 15. Preferred, 1½ per cent, quarterly, payable February 1 to holders of record January 15; preferred, 1½ per cent, quarterly, payable May 1 to holders of record April 9; preferred, 1½ per cent, quarterly, payable August 1 to holders of record July 15; preferred, 1½ per cent, quarterly, payable November 1 to holders of record October 15.

St. Louis Southwestern.—Preferred, 1¾ per cent, quarterly, payable December 31 to holders of record December 15.

Railway Officers

Executive

R. Lee Kempner of Galveston, Tex., has been elected president of the Rio Grande, succeeding **W. T. Eldridge.**

E. B. Crabtree of Jacksonville, Ill., has been elected president of the Jacksonville & Havana, with headquarters in that city, succeeding **Andrew Stevenson** of Chicago, resigned. Mr. Crabtree is president of the Illinois League of Municipalities and has been mayor of Jacksonville four times.

J. D. Farrell will retire as vice-president of the Oregon-Washington Railroad & Navigation Company, with headquarters at Seattle, Wash., on December 15 at the age of 70. He will be succeeded by **Arthur A. Murphy,** assistant general solicitor of the Oregon-Washington, with headquarters at Portland, Ore., who will assume the title of assistant to the president.

Financial, Legal and Accounting

George H. Pabst, Jr., and **Howard W. Schotter** have been promoted to assistant treasurers of the Pennsylvania.

Operating

E. T. Mander has been appointed assistant superintendent of the New York division of the Pennsylvania.

Thomas F. Lowry, who has been promoted to general superintendent of the Central district of the Northern Pacific with headquarters at Livingston, Mont., was born on January 15, 1870, at London, Ont. He entered railway service in 1885 as a messenger on the Canada Southern (now a part of the Michigan Central) and later became a telegraph operator. From 1887 to 1893 Mr. Lowry served as a telegraph operator and train dispatcher on the Buffalo, Rochester & Pittsburgh and in the latter year went with the Great Northern as a telegraph operator. He was later promoted to train dispatcher and trainmaster on this railroad. In 1906 he was promoted to assistant division superintendent at Larimore, N. D., and in the same year he was again promoted to division superintendent with headquarters at Crookston, Minn. In 1908 Mr. Lowry was transferred to Havre, Mont. He left the Great Northern in 1910 to become a trainmaster on the Northern Pacific at Spokane, Wash. He was promoted to division superintendent, with headquarters at Dilworth, Minn., in 1913, and was transferred successively to Staples, Minn., Missoula, Mont., and Livingston, Mont. In 1919 he was transferred to Minneapolis, Minn., as division superintendent, a position he held at the time of his promotion to general superintendent.

T. F. Lowry

H. F. Ingram has been appointed assistant trainmaster on the Chicago, Rock Island & Pacific, with headquarters at Seminole, Okla.

J. H. Johnson, assistant superintendent on the Northern Pacific, with headquarters at Staples, Minn., has been promoted to superintendent of the Rocky Mountain division with headquarters at Missoula, Mont., succeeding **Fred Brastrup,** transferred to the Montana division, with headquarters at Livingston, Mont.

Jerry B. Briscoe, who has been promoted to superintendent of the Panhandle division of the Atchison, Topeka & Santa Fe, with headquarters at Wellington, Kan., was born on July 26, 1879, at New London, Mo. After graduating from the New London High School in 1897 he entered the telegraph office of the St. Louis & Hannibal at New London as an apprentice operator and agent. At the end of nine months Mr. Briscoe was appointed relief agent at Frankfort, Mo., later serving until October, 1902, as dispatcher. From that time until March, 1907, he was deputy clerk of Rolls county, Mo., then entering the service of the Atchison, Topeka & Santa Fe as agent at Hanover, N. M., and Santa Rita. On December 1, 1908, he was promoted to agent and yardmaster at Vaughn, N. M., and on July 6, 1909, he was transferred to Clovis, N. M., as agent. The following year he was appointed transportation inspector on the Pecos division and in November, 1912, he was promoted to dispatcher and later to chief dispatcher at Pecos, N. M. On February 1, 1914, he was promoted to trainmaster at the same point and on November 1, 1920, he was again promoted to assistant superintendent of the Plains division, with headquarters at Amarillo, Tex. He was appointed acting superintendent of the Panhandle division on March 15, 1926, in which capacity he served until his promotion to superintendent.

Jerry B. Briscoe

T. H. Lantry, who has been promoted to general manager of the lines of the Northern Pacific east of Paradise, Mont., with headquarters at St. Paul, Minn., was born in 1867 at McGregor, Iowa. He entered railway service in 1888 as a telegraph operator on the Chicago, Milwaukee & St. Paul and in the next year he became a train dispatcher on the Minneapolis, St. Paul & Sault Ste. Marie. Previous to his first connection with the Northern Pacific as a train dispatcher at Spokane, Wash., in 1900, Mr. Lantry served successively as a train dispatcher on the Atchison, Topeka & Santa Fe, the Great Northern and the Chicago, Burlington & Quincy. In 1907, he was promoted to trainmaster and four years later to division superintendent, with headquarters at Glendive, Mont. Early in 1917 he was appointed assistant to the vice-president and in October of the same year he was given a leave of absence to serve as a lieutenant colonel with the United States Engineering Corps in Siberia. Mr. Lantry returned to the Northern Pacific in January, 1920, as assistant to the general manager and in the same year was appointed division superintendent at Livingston, Mont. He was later transferred to Seattle, Wash., and in March, 1924,

T. H. Lantry

was promoted to general superintendent of the lines between Paradise, Mont., and Mandan, N. D., with headquarters at Livingston, continuing in this position until his promotion to general manager.

G. L. McCrea, wharf agent on the Canadian Pacific at Vancouver, B. C., has been promoted to assistant superintendent on the Vancouver, Coquitlam and New Westminster terminals of the Vancouver division of the British Columbia district.

All matters affecting the handling of live stock on the Southern are now under the jurisdiction of the operating department, and **V. A. Slaughter** has been appointed general live stock agent, with headquarters at Washington, D. C., reporting to the vice-president.

Traffic

L. F. Malum has been appointed coal freight agent of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, Ill.

Frederick O. Stafford, assistant freight traffic manager on the New York Central lines west of Buffalo, N. Y., with headquarters at Chicago, has been promoted to freight traffic manager, succeeding **Will A. Terry,** deceased. **J. P. Patterson,** assistant to the traffic manager, with headquarters at New York, has been promoted to assistant freight traffic manager, with headquarters at Chicago, succeeding Mr. Stafford. Mr. Stafford was born on June 16, 1876, at Tiverton, Ont., and was educated in the Ontario School of Pedagogy, Toronto, Ont. He entered railway service in April, 1900, with the Merchants Dispatch Transportation Company (owned by the New York Central) and served in various capacities at Sioux City, Iowa, Kansas City, Mo., Des Moines, Iowa, and St. Louis, Mo., until January, 1911. At that time he was promoted to general westbound agent of the New York Central, with headquarters at Chicago, and in August, 1917, he became manager of the New York Central Fast Freight lines, with the same headquarters. In July, 1920, Mr. Stafford was appointed general freight and passenger agent of the Rutland, with headquarters at Rutland, Vt. He returned to the New York Central in August, 1924, as assistant freight traffic manager of the lines west of Buffalo, a position he held until his promotion to freight traffic manager in the same territory.

F. O. Stafford

Mechanical

W. R. McMunn has been appointed superintendent of rolling stock of the Merchants Despatch, Inc., with headquarters at Rochester, N. Y.

H. J. Force, chemist and engineer of tests of the Delaware, Lackawanna & Western, with headquarters at Scranton, Pa., having resigned, **J. J. Laudig** has been appointed acting chemist and engineer of tests.

John Daniels, road foreman of engines on the Oregon-Washington Railroad & Navigation Company, with headquarters at LeGrande, Ore., has been appointed general fuel supervisor, with headquarters at Portland, Ore., succeeding **A. W. Perley,** deceased.

Engineering, Maintenance of Way and Signaling

Edward E. Stetson, principal assistant engineer of the Chicago Union Station Company, has been appointed assistant to the chief engineer of the Pennsylvania, with headquarters at Chicago, effective December 16.

Gordon R. West has been appointed engineer of reclamation of the Missouri Pacific, with headquarters at St. Louis, Mo., to handle reclamation and development projects involving problems of drainage and irrigation and similar assigned duties.

Purchases and Stores

E. G. Walker, chief clerk in the purchasing department of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, has been promoted to assistant general purchasing agent, succeeding **Eugene A. Clifford,** who has resigned to become general purchasing agent of the Chicago & North Western and the Chicago, St. Paul, Minneapolis & Omaha.

Obituary

E. C. Ingalls, division storekeeper on the Missouri Pacific, died on December 1 at Dupo, Ill.

Llewellyn B. Jones, auditor of the Coast lines of the Atchison, Topeka & Santa Fe, died on November 24 at the Santa Fe hospital in Los Angeles, Cal.

A. H. Powell, superintendent of shops of the Western Pacific, with headquarters at Jeffery shops, Sacramento, Cal., died on November 28 at his home in Sacramento.

George A. Collins, chief of police of the New York Central lines west of Buffalo, with headquarters at Cleveland, Ohio, died suddenly on December 5. He was born on February 26, 1868, at Petrolia, Ont., and entered the service of the Lake Shore & Michigan Southern (now a part of the New York Central), as captain of police on June 1, 1907. He was promoted to chief of police on June 1, 1917, which position he held until the time of his death.

Archibald G. Loomis, treasurer of the Chicago, Milwaukee & St. Paul, died on December 3 at his home in Chicago, following a stroke of apoplexy. He was born on June 20, 1848, at Hartford, Conn., and graduated from high school in that city. Starting his career as a clerk in the Aetna National Bank of Hartford in 1865, Mr. Loomis spent 34 years in the employ of that company, serving later as cashier and reaching the presidency in 1891. He became vice-president and director of the National City Bank of New York in 1899 and in 1905 he removed to San Francisco, Cal., with N. W. Halsey & Co. For the eight years until 1915 he was vice-president of the Union Trust Company, Providence, R. I. His railway service began on June 19, 1917, when he was appointed assistant treasurer of the Milwaukee. Three months later he was elected treasurer, with headquarters at Chicago, a position he held until his death.

J. M. Snodgrass, professor of railway mechanical engineering, department of railway engineering, University of Illinois, died on Saturday, December 4, following an operation for cancer. Professor Snodgrass was graduated from the University of Illinois in 1902 with the degree of B. S. in mechanical engineering. From 1902 to 1906 he was instructor in mechanical engineering and in railway engineering at the university. He was then employed by the American Locomotive Company at Schenectady, N. Y., returning in 1908 to the University of Illinois as associate and assistant professor in the department of mechanical engineering and special investigator in the engineering station. In 1913 he became assistant professor and later professor of railway mechanical engineering, department of railway engineering. Professor Snodgrass also had been employed for periods varying from two to six months by the Lake Shore & Michigan Southern, the Illinois Central, the Cleveland, Cincinnati, Chicago & St. Louis, the Commonwealth Edison Company and other companies.